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THE AMERICAN JOURNAL OF PHARMACY

PUBLISHED BY AUTHORITY OF THE

PHILADELPHIA COLLEGE OF PHARMACY.

EDITED BY

HENRY KRAEMER.

PUBLICATION COMMITTEE FOR 1907.

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AND THE EDITOR.

VOLUME 79.

PHILADELPHIA:

1907.

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THE AMERICAN
JOURNAL OF PHARMACY

JANUARY, 1907.

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THE ESTIMATION OF STRYCHNINE IN NUX VOMICA BY THE NITRIC ACID PROCESS.

By M. H. Webster and R. C. Pursel.

Since Gerock first isolated strychnine from the total alkaloids of nux vomica by nitrating the brucine, numerous methods have been suggested whereby the alkaloidal nature of the brucine may be totally destroyed without affecting the strychnine. Divergent opinions on the accuracy of the various processes have been expressed and much controversy has ensued.

The adoption in the U.S.P. 1900 of Gordin's modification of the Keller process has but served to stimulate such discussion until there is at present no more interesting and, in view of the strict rulings of the Food and Drug Commission, no more important question before the pharmaceutical chemist than the determination of strychnine in nux vomica.

In Gerock's[1] process the total alkaloids are converted into picrates and treated with dilute nitric acid. This destroys the brucine picrate, leaving unaltered the strychnine salt which is collected and weighed.

Nagelvoort[2] has found a modification of this process to give satisfactory results at low temperatures.

Keller[3] discards the preliminary conversion of the alkaloids into picrates, 1 c.c. of nitric acid (1.42) is added to a solution of (approximately) 0·3 gramme of total alkaloids in 10 c.c. H_2SO_4 10 per cent.;

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[1] *Arch. d. Phar.*, 1889, p. 159.

[2] *Proc. A. Ph. A.*, 1893, p. 165.

[3] *Zeit Oest. Apoth.-Ver.*, 1893, 587.

at the end of 1½ hours the liquid is made alkaline with ammonia, and shaken out by means of chloroform.

Howard[1] found Keller's process accurate if conducted at 10° C. While endorsing his (Howard's) opinion, Reynolds and Sutcliffe[2] call attention to the influence of nitrous acid on the oxidation of the brucine, and recommend that the decomposition be stopped immediately the nitration of the brucine is completed.

Gordin[3] indisputably proved that in carrying out Keller's process partial oxidation of the strychnine occurs. In Gordin's process (now official) the total alkaloids from 10 c.c. fluid extract are dissolved in 15 c.c. of H_2SO_4 3 per cent. After cooling, 3 c.c. of a mixture of nitric acid and water (equal volumes) is added and at the end of 10 minutes the solution is made alkaline and shaken out with chloroform.

Lenton[4] obtained erratic results with Gordin's process and considers it not comparable with the ferrocyanide process. Farr and Wright[5] operated on 0·084 gramme brucine by Gordin's process and recovered 0·0767 gramme alkaloid (91·3 per cent.). They suggest warming the solution of alkaloids to 122° F. before adding the nitric acid mixture.

Operating on 10 c.c. of a fluid extract by the U.S.P. process, we extracted the total alkaloids in the usual way, and dissolved them in 15 c.c. 3 per cent. sulphuric acid. On adding the 3 c.c. of nitric acid mixture, as directed, no change in color took place and, at the end of 10 minutes, the mixture was only faintly straw-colored. Proceeding with the process, we obtained 0·171 gramme of alkaloid by titration. From this neutral solution the alkaloid was again extracted secundum artem, and dissolved as before in 15 c.c. 3 per cent. sulphuric acid, 3 c.c. of nitric acid mixture was added, and at the end of 10 minutes the mixture, now slightly yellow in color, yielded 0·157 gramme alkaloid.

For experimental purposes the total alkaloids were extracted from 100 c.c. of the fluid extract by the U.S.P. method, and dissolved in weak sulphuric acid. Three aliquot portions, each representing

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[1] *Analyst*, 1905 (30), 261.

[2] *Phar. Jour.*, Vol. 76, p. 555.

[3] *Proc. A. Ph. A.*, 1902, p. 336.

[4] *Phar. Jour.*, Vol. 75, p. 864.

[5] *The Chemist and Drug.*, July 28, 1906.

10 c.c. of fluid extract, yielded, after nitration by the official method, 0·167 gramme, 0·109 gramme, 0·118 gramme respectively of alkaloid reckoned as strychnine—results somewhat discouraging.

EXPERIMENTS WITH PURE ALKALOIDS.

We tried the process on pure alkaloids and obtained the following results:—

	Temp.	Time.	Alkaloid Recovered.
Brucine, 0·145 gm.	85° F.	10 min.	0·135 gm.
Strychnine, 0·098 gm.	86° F.	10 min.	0·098 gm.
Brucine, 0·127 gm.	83° F.	2 hours.	0·1174 gm.

Recently the experiments were repeated, using the same process, with results as follows:—

	Temp.	Time.	Alkaloid Recovered.
Brucine, 0·131	73° F.	10 min.	none.
Brucine, 0·122	73° F.	10 min.	none.

The results were decidedly interesting; while previously we were prepared to agree with those who considered the process faulty, these latter experiments seemingly justified all the claims of its author. Anyway we set out to discover, if possible, the unknown conditions which modified the action of the nitric acid on the brucine.

Gordin's process presumably depends upon the nitration of the brucine when the total alkaloids are dissolved in an acid solution consisting of 10 per cent. U.S.P. nitric acid (by volume) and 3 per cent. sulphuric acid (by weight). It was found that 0·1 gramme of brucine dissolved in 15 c.c. of such a mixture (using acids strictly pure) yielded a water-white solution which remained colorless during 48 hours at ordinary temperatures.

A solution of pure brucine was prepared which contained 0.1 gramme of the alkaloid in 15 c.c. sulphuric acid 3 per cent., and to different portions of 15 c.c., 3 c.c. of the nitric acid mixture (HNO_3 1 vol., water 1 vol.) was "added" in the following various ways:—

Experiment (*a*). The nitric mixture was allowed to trickle gently down the side of the beaker containing the solution of brucine, and remain as a separate layer at the bottom. In about 30 seconds this layer became pink, then gradually red. At the end of two minutes the beaker was rotated.

Result: Bright-red mixture giving at the end of ten minutes no reactions for alkaloids.

Experiment (*b*). The solution of brucine was rotated while the nitric acid mixture was being added, so as to thoroughly mix the acids immediately on coming in contact.

Result: Water-white mixture which had a faint yellow tinge after 24 hours.

Brucine recovered at end of that time 0·91 gramme, *i. e.*, 91 per cent.

Experiment (*c*). The nitric acid mixture was added in a haphazard manner and beaker rotated as directed in the official process.

Results: Various, usually the mixture remained colorless, sometimes it became red.

Farr and Wright suggested heating the solution of alkaloids to 122° F. before adding the nitric acid. Accordingly these experiments were repeated at that temperature.

The results were the same as before; experiment (*a*) gave a red liquid; (*b*), a colorless mixture which remained so over night, and (*c*) a mixture red or colorless, as luck would have it.

The foregoing experiments were repeated, using different samples of nitric acid; those containing traces of hyponitric acid affected the brucine much more readily than an acid strictly pure.

Kebler and Hoover found traces of this impurity in two out of four samples of C.P. nitric acid they examined.[9]

Besides the various methods of adding the nitric acid, the absence, or varying proportion, if present, of the lower oxides of nitrogen may possibly account for the astonishing lack of uniformity in the results of different operators. The presence of the lower oxides of nitrogen in nitric acid, either as an impurity or as the first product of the reaction, is often necessary to *start* the nitration of organic compounds. In the experiment (*a*) by allowing the strong nitric acid to remain in contact with the brucine solution this desideratum is obtained. It seemed reasonable to infer from this, that if the preliminary reduction of the nitric acid were prevented, the production of di-nitro-brucine would not take place. Accordingly a few drops of hydrogen peroxide solution were added to a portion of the acid solution of brucine, and the strong nitric acid mixture was trickled down the side of the beaker. It formed a distinct colorless layer at the bottom which showed no trace of color in several hours.

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[9] U. S. Dept. of Agriculture, Bureau of Chemistry, *Bulletin* 99, page 191.

To another portion of the brucine solution 1 c.c. of a solution of sodium nitrite was added. A reddish tint developed slowly, since, as pointed out by Lunge,[10] pure nitrous acid does not affect brucine. A few drops of solution of hydrogen peroxide added to the above mixture produced a bright-red color immediately by partially oxidizing the nitrous acid into nitric acid and other oxides of nitrogen.

From these reactions we concluded that the most suitable reagent for nitrating the brucine would be nitric acid containing a fair proportion of the lower oxides of nitrogen in solution.

We therefore modified the U.S.P. process by substituting fuming nitric acid (commercial nitrous acid S.G. 1·42) for the U.S.P. nitric acid (S.G. 1·40) and extending the period of contact to 30 minutes in order to insure destruction of the whole of the brucine at various temperatures. The results were as follows:—

	Temp.	Time.	Alkaloid Recovered.
Brucine, 0·196 gm	60° F.	30 min.	none.
Strychnine, 0·0963	93° F.	30 "	0·09628
Mixture { Brucine, 0·20 . . . . Strychnine, 0·0942 . }	87° F.	20 "	0·0941

Inasmuch, however, as commercial nitrous acid is unstable and of varying composition, we considered it desirable to discard its use in favor of U.S.P. nitric acid and sodium nitrite. By these reagents the following results were obtained with pure alkaloids:—

	Temp.	Time.	Alkaloid Recovered.
Brucine, 0·203 gm.	60° F.	20 min.	None.
Brucine, 0·198 gm.	63° F.	20 "	"
Strychnine, 0·123 gm.	90° F.	30 "	0·1229
Mixed { Brucine, 0·134 gm. . . Strychnine, 0·112 gm. }	65° F.	20 "	0·1118
Mixed { Brucine, 0·152 gms. . Strychnine, 0·091 gm . }	90° F.	30 "	0·091

These results show that the U.S.P. process modified in this way is accurate over a wide range of temperature when pure alkaloids are employed. It has been observed that any impurity in the mixture of total alkaloids from nux vomica has a tendency to retard the nitration of the brucine. Again if, as has been suggested, there is a third alkaloid in nux vomica it may not be a negligible factor so that deductions from experiments with pure alkaloids cannot wholly be applied to the total alkaloids obtained in the usual way.

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[10] *Ztschr. f. angew. Chem.*, 1902, No. 1.

Different portions of 10 c.c. of the fluid extract (mentioned before) were operated on by the usual method until the total alkaloids were obtained. These were subjected to the process, detailed below, then the alkaloidal residue was extracted and titrated. To overcome the objections to experimenting with unknown quantities of alkaloids, and to thoroughly test the process, the alkaloid was again extracted after the above nitration, subjected a second time to the nitrifying agent under same conditions as before, then extracted and titrated. The results are given below.

	Temp.	Time.	Alkaloid recovered.	Alkaloid obtained on repeating.
1. Alkaloids from 10 c.c. F. E.	65° F.	30 min.	0·1068 gm.	0·1063
2. Alkaloids from 10 c.c. F. E.	90° F.	30 "	0·1066 gm.	0·1054
3. Alkaloids from 10 c.c. F. E.	78° F.	10 "	0·1068 gm.	not repeated.

The process was then applied to the fluid extract of nux vomica without preliminary extraction of the alkaloids, 10 c.c. was evaporated to dryness in a beaker. The resulting extract was dissolved, as far as possible, in 15 c.c. 3 per cent. H_2SO_4 and treated with nitric acid and sodium nitrate in the usual way. At end of 30 minutes the mixture was diluted with 20 c.c. water, run through a pledget of cotton wool, then filtered and followed by wash water. The bulked liquid was put in a separator, made alkaline with KOH solution, and extracted by means of chloroform. The alkaloid was obtained in definite crystals having a yellow tinge, but otherwise free from impurity. The titration indicated 0·1072 gramme, which closely agrees with figures above.

Evidently, then, the process is not affected by the purity of the alkaloidal residue. We have already shown that it is applicable over a wide range of temperature, and is not affected by any possible manner of adding the reagents or probable impurity therein. Subsequent use in the routine work of the laboratory justifies these conclusions.

Adding our modifications to the text of the U.S.P., the following gives the process in detail:—

—" dissolve the alkaloidal residue in 15 c.c. of 3 per cent. H_2SO_4. To this solution add 3 c.c. of a mixture of equal volumes of nitric acid (S.G. 1·4) and distilled water, *then add 1 c.c. of a 5 per cent. solution of sodium nitrite in water*, and, after rotating the liquid a few times, set it aside for exactly *30 minutes*, stirring it gently three times during this interval." The solution is then made alkaline and shaken out with chloroform in the usual way.

91 FULTON STREET, NEW YORK.

THE FOOD AND DRUGS ACT, JUNE 30, 1906, AND ITS EFFECT ON THE COMPOSITION OF MEDICINE.[1]

BY H. W. WILEY.

The food and drugs act introduces for the first time into this country a national control over interstate and foreign commerce in foods and drugs. The importation of foreign drugs is controlled at the ports of entry under an existing law which was first enacted in 1848. This law not having been specially repealed, I believe, under the ordinary construction, remains in full force except in points in which its provisions are in conflict with those of the new inspection law. Just how far the requirements of the new inspection law must be read into the old law is a matter of purely legal character on which I have no opinion. It is evident, therefore, that the application of the act, in so far as drugs are concerned, will be practically to the control of domestic commerce.

Two standards for drugs entering into interstate commerce are specially noted in the act, namely, standards as set forth or indicated in the U.S.P. and the N.F.; second, standards which are placed on the drugs themselves. Under the terms of the act it appears that any drug bearing a name recognized in the U.S.P. or N.F. shall be held to conform in strength and purity to the standards therein established or indicated, whether they are marked U.S.P., N.F., or not. If it is desired that these drugs shall conform to any other than that of the established authorities, this standard must be plainly stated upon the label.

Drugs which are used for technical purposes are evidently not included in this classification, inasmuch as the definition of drugs excludes all chemicals and all drugs ordinarily so used, employed for technical purposes. This is so clearly brought out in the law itself, it appears to me, as to need no further elucidation, yet some questions have been raised respecting a discrimination. As a mere suggestion I would say that when substances are used both for medicinal and technical purposes, it would be advisable to state upon the label the fact that they are to be used "for technical purposes," when so intended, or to attach some other word so as to show clearly that they are not to be used as drugs. In regard to certain kind of substances, the law presents a double attitude. An illustration of this is in the case of alcoholic products. When these are used as beverages it is not necessary to state upon the label the quantity of alcohol which they contain. If, however, prescribed as remedies or drugs, tonics, or otherwise, the label must bear the required statement.

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[1] Read at the Philadelphia Branch of the American Pharmaceutical Association, December 12, 1906.

A question arises here of some importance in regard to these bodies. If the physician prescribes wine as a tonic the patient may purchase this wine either of a liquor dealer or a druggist, and the same is true, for instance, in the case of malt extract which may be sold as indicated above or over the bar. When is an article purchased as above to be considered as a beverage and when a medicine? Here is a question of such nice legal bearings that I am unable to give any opinion. Theoretically any such package should bear the percentage of alcohol therein contained; practically it would be rather difficult to enforce such a regulation.

The most striking feature of the Food and Drugs Act is that relating to the practical exemption from supervision, as to standards, of the so-called proprietary remedies. Just why the U.S.P. and N.F. remedies should be subjected to such a rigid standard and practically the same mixtures be allowed to go uninspected, when in the guise of a patent medicine, is a question of importance. This is no more strange, however, than the laws regulating the practice of medicine and pharmacy. Those who are legitimately engaged in the practice of these professions are required to take a long course in preparatory training and to secure a license after examination before State and Municipal Boards in medicine and pharmacy, and even then they are required to practice their professions under the strict supervision of the law. On the other hand, the quack doctor or the proprietor of a fake remedy may practice medicine through the public press and dispense drugs in the same manner, through the mails, and with the aid of the express companies, without any medical or pharmaceutical training whatever, without securing any license or paying any fees, or without being subjected to any kind of an inspection, save in the placing of the names of a few drugs upon his labels and to refrain from misrepresentation as stipulated by the Federal Act. In other words, that part of medicine and pharmacy which least needs a supervision of the law is practically the only part which comes under its supervision, while the unspeakable abuses which attend the other branches of remedies go practically unchecked. It is hoped that when amendments are made to the law they will be of a character to at least impose equally rigid inspection upon proprietary remedies. My experience with these remedies is purely of an academic character, but in the last few months I have had presented to me hundreds of labels of proprietary remedies and also the formulas of the articles. The information submitted has brought out many interesting features of which I shall mention only two. A large majority of all of the proprietary remedies are made by manufacturing firms whose names appear nowhere upon the label and who would be, I am sure, heartily ashamed to have them there. Most of these proprietary remedies are compounds of well-known drugs, most of which appear in the U.S.P. or N.F. and doubtless are copies of ordinary prescriptions. That first-class firms should lend their influence or countenance to a thing of this kind is almost incredible.

A few days ago I read a letter of consolation written by a manufacturing firm to a promoter of a great female remedy, so-called, assuring him that the prescription or medicine which this firm manufactures for him will bear every test of the Pure Food and Drugs Act and that he need have no fear in giving his guaranty. In point of fact the guaranty should be given by the manufacturer of the remedy and not simply by the seller and advertiser thereof. The prescription is simple enough and doubtless wholly ethical, but the use to which it is put is something which transgresses every law of ethical propriety, whether it be on the part of the manufacturer who makes the stuff for the profit or on the dealer who advertises it.

There are many other points which naturally present themselves in connection with the drug part of the Food and Drugs Act. I need hardly assure this audience that in so far as the Department of Agriculture is concerned this act will be enforced in the letter of its terms and the spirit of its purpose, that is, in harmony with the ethical principles of pharmacy and medicine. We shall do all we can to conserve these principles in the drug trade as it passes from State to State, having in view the noble purposes of the two great professions interested, namely, the preparation of pure remedies and the alleviation of suffering and the treatment of diseases. To this end we shall labor to see that the drugs which shall pass from State to State are pure and up to the standard of strength required, and that the proprietary remedies bear the legend which the law requires and that their labels be free from any statement, design or device which is false and misleading in any particular. If this last can be secured in the spirit of the act it seems to me it will put an end forever to the disgraceful condition in which our country now finds itself, flooded, as it is, with remedies for the laity, advertised falsely and reaching, through the public press, every home and hamlet of our country.

FOUR THINGS EVERY DRUGGIST SHOULD KNOW ABOUT HIS BUSINESS.[1]

By Harry B. Mason.

There are four things which every druggist, as a commercial man, should know about his business, but, vital as they are, I fear the majority of druggists are in ignorance of them.

THE FOUR ESSENTIALS.

(1) Every druggist should know his percentage expense of doing business.

(2) He should know his average gross profit, estimated on the total volume of sales.

(3) He should know whether certain important lines or departments, like those involving cigars, candy and soda, are making or losing money for him, and, if they are making money, how much.

(4) He should know for a certainty what his total annual earnings are from the entire business.

Now why is it necessary to know these four things? Because they are absolutely fundamental to the wise and successful conduct of any business. Without such facts at command one is completely in the dark and is in no condition to guide his craft skillfully and well. He is like the physician who attempts to treat a case without first taking the temperature, feeling the pulse, looking at the tongue, examining parts of the body which may be affected, or inquiring as to the patient's symptoms.

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[1] Read before the Philadelphia College of Pharmacy, December 18, 1906.

The two cases are exactly parallel, and I do not think I need dwell further upon the comparison to force the point home.

There are hundreds of druggists in this country to-day who are losing money on their business and who will not discover it until the sheriff comes along and sells them out. There are thousands who, not deceived to quite this extent, are not making anything like so much money as they fancy; and there are other thousands who might make much more than they do if they only understood the exact condition of the patient and consequently knew where and when to apply the corrective treatment.

PERCENTAGE EXPENSE VS. GROSS PROFITS.

Let me take up the four things which I have declared to be essential and examine into their necessity with some detail.

The relation between the percentage of expense and the percentage of gross profit is one of vital significance. It throws a flood of light on the business and makes improvements possible in a thousand ways. An address could be delivered on this subject alone, but I must content myself with a few observations only.

Suppose it costs 30 per cent. to do business—30 cents to sell a dollar's worth of goods. Here, then, is a fact which should be considered every time the price is established on an article or line of articles. It is of course perfectly true that one cannot always advance the selling price sufficiently beyond the line of expense. Many "patents" have to be sold at an actual loss, when the cost of selling them has been added to the cost of purchasing them. Many other articles, particularly in cities where the competition of the large druggists and the department stores keeps prices down, have to be sold at very close margins if not at an actual loss. But above and beyond such lines, there is abundant opportunity here and there to establish selling prices which will counterbalance the losses and make the gross profit average up satisfactorily.

In another paper I have commended, and I want again to commend, the practice of a successful Detroit druggist who aims to make 100 per cent. on drugs and prescriptions and 50 per cent. on sundries. Even at that his average gross profit is but 41, the small margins or even losses on " patents " and other goods bringing down the figure greatly It will perhaps be remembered that Mr. Falkenberg, the Chicago druggist, attained some notoriety in the drug journals a year or two ago by insisting that one should make 200 per cent. on his prescriptions if he desired to get an adequate reward for his time and skill, and if he wanted his business as a whole to yield him the returns that ought to be realized—and it may be said in passing that Mr. Falkenberg wasn't so far wrong as he might have been.

Returning to the factor of average percentage expense, it may be said that this should of course not be applied with hard and fast rigidity. It costs more to sell some goods than others. A rapid-selling patent-medicine, permitting of frequent turnovers of capital, involving no such waste as cannot be escaped in bulk goods, and consuming little of the clerk's time in making a sale, can be handled at a much smaller expense than a prescription. Some allowance should be made for these differences, and when it *is* made it will be seen that patent medicines and similar ready-for-sale goods are after all disposed of at a larger net profit, or certainly at a smaller loss, than otherwise seems to be the case.

But despite this, the small druggist has to be guided more or less clearly by his average gross profit, and he cannot follow the practice of the well-organized department store in considering each department a separate unit, with its own percentage expense and set of figures and rules generally.

It is a good idea to estimate the percentage expense in two ways: by the customary method of including the proprietor's salary among the expenses, and also without this element of cost. Often this plan is of great help. Suppose, for instance, that some article will at best pay a gross profit of but 26 per cent. Your total percentage expense, say, is 30 per cent. Your expense minus your salary is 22 per cent. Such an article, then, is seen to pay a part of your salary allowance, and not to be carried at an absolute loss to your pocketbook. This may prove a comforting assurance if the article is one which a trade demand necessitates that you keep in stock.

WHAT THE NET PROFITS OUGHT TO BE.

In general it may be said that there ought to be a difference of at least ten per cent. between the percentage expense and the gross profit—and the ideal should be to attain as nearly to the fifteen per cent. mark as possible. The average expense of the average druggist is about 30 per cent. The average gross profit is about 40 per cent. If the expenses can be screwed down a point or two, or the profit screwed up, or if both feats can be performed, so much the better. But at the least the two factors should be kept at the respectable distance apart of ten points. As a drug business gets up into fifteen or eighteen or twenty thousand dollars a year, it ought to be practicable in most cases to have a percentage expense not greater than 23 or 25, and in the smaller towns a point lower down than that can be reached.

If the facts could be known, I have no doubt that many druggists would find to their great surprise that they were actually making much less than 10 per cent. net. A Chicago druggist, recently persuaded to estimate his percentage expense and his gross profit, was chagrined to discover that one was 32 per cent. and the other 36 per cent. Once in possession of the facts he was in position to apply corrective agencies wherever possible, and I venture to say that he will never again be lulling himself to sleep in the fool's paradise from which he was so grateful to escape.

Now it must be understood that everything I have said and shall say about gross profits has reference to the profit on the sale price instead of the cost price. Expenses are always estimated on sales, and profits ought to be estimated on them also in order to permit of ready comparisons on the same basis. There is a chance for confusion here and the point ought to be clearly realized. Suppose you pay $1 for a certain product and you desire to make 35 per cent. on it gross. If you make the mistake of adding this 35 per cent. to the cost price you will sell the article for $1.35. Now it will cost you, let us say, 28 per cent. of the selling price to handle the article, which amounts to 39.2 cents, so that while you think you are making a net profit of 7 per cent., you are actually losing 4.2 cents on the transaction!

In this connection a few rules may be of assistance. In order to make a profit of 16⅔ per cent. on the sale price, add 20 per cent.

to the cost; for a 20 per cent. profit add 25 per cent.; for a 25 per cent. profit add 33⅓ per cent.; for a 33⅓ per cent. profit add 50 per cent.; for a 40 per cent. profit add 67 per cent.; for a 50 per cent. profit add 100 per cent.

ARE THE DEPARTMENTS MAKING OR LOSING MONEY?

So far I have discussed the necessity of knowing the first two things in the list of four essentials given at the beginning of this paper—the percentage of expense and the percentage of profit. Now let me say a word about the remaining two. As the third essential I have stated that the pharmacist "*should know whether certain important lines or departments, like those involving cigars, candy, and soda, are making or losing money for him, and, if they are making money, how much.*"

As one of the editors of a pharmaceutical journal which has recently devoted considerable space to the discussion of these business topics, I have within the last year seen many letters from retailers throughout the country which have been full of significance, and which, could I quote them, would illustrate and enforce many of the points which I am striving to make clear in this paper. Several of the letters would be found freighted with meaning in this particular connection.

In one case, that of a Cleveland druggist, we convinced him from his annual statement that he was losing money constantly on both his candy and cigar departments. He had kept separate records of these two departments and of the soda business also. From the figures we found that while the cigar trade yielded theoretical profits of perhaps 25 or 30 per cent., he had actually made but 16 per cent., and that, since his percentage expense was 28, he had lost 12 per cent. Just where the leak was I do not know. Once in a while clerks smoke "on the house." Occasionally cigars are filched from the tops of the cases where some dealers exhibit them. In certain cities competition with the United Cigar Stores Company and other concerns brings the selling prices down below a living profit for the retailer operating under a considerable expense.

The candy department of this Cleveland druggist was seen to yield him a gross profit of only 25 per cent., and so he lost 3 per cent. on that. His percentage expense, estimated without his personal salary, was 23, so that the candy department paid little even toward his own salary and less than nothing toward making his capital productive. It may be said in passing that bulk candy involves a bigger waste than is realized by most druggists. Clerks are often careless in weighing it, and there is a temptation to take a piece now and then, besides handing one to the customer—especially if the latter happen to be an attractive girl.

Now it must not be hastily assumed that the Cleveland druggist should have thrown his cigar and candy departments overboard because they failed to bring him a profit on the face of the returns. Charles H. McConnell, proprietor of the Economical Drug Store in Chicago, whose daily sales exceeded a thousand dollars, found some years ago that his soda and cigar departments were actually losing money for him and he promptly abandoned them. But this step cannot always be taken by the small retailer. Why? Because if one department is thrown out, and something else cannot be put in its place, the total sales are reduced and the percentage expense is consequently increased. Let me state the situation in another way: the average druggist has a stationary expense; a given department or line, unless it be that of soda, will usually require no more help and no additional expense of any kind; there really is no expense attached to it, then; and the gross profit becomes net profit—everything made is "velvet." It would therefore be unwise in most instances for the small retailer, with limited possibilities, to throw out a department which paid him only 20 per cent. unless he could put in another which paid him more. The large dealer can do this. Ordinarily the small dealer cannot.

But some one might reply to me at this juncture: If we are going to keep our departments anyway, what good will it do us to know the detailed facts concerning their rate of profit? Much good—much good. Every line and every department should realize certain returns—returns which of course are different in every case. One ought to know whether a department is "making good" or not. If it is failing to do so, systematic efforts should be made to stop the leaks and correct the situation. The clerks must be told that the department is not doing what it ought and they should be put on the *qui vive* to improve matters. *Knowledge is power!*

And it must be obvious to every merchant that as *few* goods as possible should be sold at a profit below the percentage expense, and as *many* as possible above it. By no other rule can a satisfactory average be yielded. If it is necessary to carry a lot of stuff that pays indifferently, the thing to do is to expend a little gray matter in planning to put in something that will pay handsomely and bring up the average.

Now as for the fourth essential fact which every druggist ought to know, this is in a sense confirmatory of the other three and consequently need not be discussed at length. A man should know what his annual earnings are in order that he may understand whether the business yields him as much as it should, and in order, also, that he may decide upon his living expenses intelligently. But he should know this fact *with absolute certainty.* That many druggists deceive themselves as to their income by faulty methods of calculation, or by no calculation at all, has been borne home to me after considerable observation and experience.

THE METHOD OF BOOKKEEPING.

Now granting the necessity of knowing the four things which I have declared to be essential to every druggist, the question arises: How may they be learned easily and simply, without expense of time and labor?

After I had read a paper on one phase of this general subject at the last meeting of the American Pharmaceutical Association, a pharmacist came to me privately and said: "I must admit that I am one of the foolish druggists who keep no business records, but my excuse is that I am busy and have no time for them." Others have expressed similar views and there is no doubt that many druggists are deceiving themselves with the assumption that a great deal of time would be consumed in making proper records of their business operations. Still others, again, do not know how to go about the task.

I mean to outline a simple method that will not take five minutes a day and that can be practised in connection with the handling of customers' accounts. Let me say at the outset that this plan will not please merchants who keep thorough and complete records of everything, and who use a double-entry system for the purpose. While the latter method is the ideal one, and while it is employed by all the large retailers throughout the country, I am quite convinced that it would be useless to expect the average druggist to adopt it. He will throw the whole thing aside if too much is expected of him.

Now to begin by summarizing in a single paragraph what the necessities of the case require, let me say that the only records which are absolutely essential, and to which I shall consequently confine myself in this paper, are those involving (1) the sales, (2) the purchases, (3) the expenses, (4) the inventory, and (5) the purchases and sales of departments like soda, candy, cigars, and any other line that the proprietor might want to watch for a year or perhaps constantly. This is all—and it is certainly easy and simple enough. If in addition a cash book is kept, so much the better, but I am confining myself in this paper to the absolute essentials.

Deduct the annual purchases from the annual sales and you have the gross profits. Deduct the expenses from the gross profits and you have the net profits. But you need two checks on these figures, and these are provided by the inventory and the accumulation of surplus cash in the bank or elsewhere. The inventory may show that the stock has increased or decreased, and you may consequently have made several hundred dollars more or less than you would otherwise imagine.[1] Any increase in the inventory should be added to the gross and net profits; any decrease should be deducted from them.

This would give you the final figures except for the additional check provided by the cash accumulations. To go back a little, we have seen that the net profits as first calculated are to be supplemented by the extent to which the stock has increased. A small portion of the year's profits, then, are represented in stock, and the remainder in cash. Now, waiving the item of stock appreciation and considering only the cash returns, it is evident that the latter must tally approximately with the money which has accumulated in the regular bank account, plus any amounts which you may have drawn out during the year in excess of your definite salary or for outside investments. Sometimes a difference is disclosed here that changes the results considerably; and indeed no druggist is in position to estimate his profits for the year accurately unless he corrects them by means of the inventory and careful cash records.

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[1] A Toronto druggist, failing to take an inventory for two years, found that his stock had increased $1,600. An Indianapolis druggist, on the contrary, was surprised to find last year that his stock had decreased over $500. Many actual instances could be cited to show what fluctuations the inventory discloses, and how markedly it changes the results.

Now it is of course readily seen how the four things which I have declared to be essential can be learned from the foregoing records. (1) The percentage expense is gotten by dividing the annual expenses by the annual sales. (2) The percentage of gross profit is gotten by dividing the annual gross profits by the annual sales. (3) The necessary facts regarding the success or failure of certain departments are gleaned from the department records, concerning which I mean to say more in detail later on. (4) The total annual income is obtained by adding the proprietor's salary to the net profits of the business.

DETAILS OF THE METHOD.

How are these records of sales, purchases, expenses and so on to be kept? I shall not outline any hard and fast method. Each druggist may devise a plan which seems to him best and which fits most harmoniously into his bookkeeping system.

The simplest way would be to use a plain ruled book, make upright columns for the several sets of figures with the exception of the inventory, and devote each horizontal line to one day's record, having the date in the first column at the left. The columns at the end for the department statistics should have each two spaces, thus providing for both sales and purchases. The book would then look something like this, subject to such modifications as each druggist might find desirable:

Date.	Sales.			Purchase.	Expenses.			Cigars.		Soda.		Candy.	
	Cash	Cr.	Total		Self	Clerk	Misc.	Sales	Purch.	Sales	Purch.	Sales	Purch.
Jan. 1													
Jan. 2													
Jan. 3													

As for the original entries, these could be treated exactly as you treat charges or credits for or against customers. Make them in a day-book if you use a day-book; put them on slips if you use slips. Every time you buy a bill of goods, or pay out money for an expense, or figure up the day's sales, or do anything else falling within the scope of these business records, simply enter it as you would when a customer buys goods on credit. In posting from the day-book or the slips, carry the customers' accounts to the regular ledger, and the business records to the special ledger, giving totals only. If it takes you ten minutes every morning to do your regular bookkeeping, it won't take you three minutes more to include this special business bookkeeping. Is it not worth this slight expense of effort?

Something ought to be said in detail about these various records. Total sales for the year of course include credit as well as cash sales; how are they to be handled? There are several methods. One would be to consider all payments of accounts as cash sales, and record them daily as a part thereof. At the end of the year the standing accounts could be deducted from those of the year before, and the decrease or increase subtracted from or added to the sales. A better way, perhaps, would be to have three spaces in the sales column, one for cash sales, another for credit sales, and a third for the totals. This method would enable you to watch your total sales from day to day and month to month.

THE DEPARTMENT RECORDS.

The department records, it will be seen, are in part repetitions of the general records, and this would grieve the heart of the double-entry bookkeeper whose principle it is never to have the same item charged against two accounts at the same time. But as long as we understand that we are repeating charges no particular harm is done. What we are to record concerning the departments are merely the sales and the purchases. Both are recorded elsewhere against the general business, and are only repeated separately in order that we may know how each department stands when considered by itself.

The department sales are easily arrived at, either by using a separate money drawer or cash register for each department, or by figuring up the department sales every day from the itemized slip made by the general cash register. In either case the credit sales are of course to be added so far as they fall within the different departments. The department purchase records are in the main gotten from manufacturers' or jobbers' invoices, but one must not forget also to make a charge of anything that may be taken from the general stock and used for a department, such as a sponge for the cigar counter, or a few ounces of some flavoring extract for the soda fountain.

The purchases of any department, deducted from the sales, give you the gross profits. It is not practicable for the small dealer, using the same clerks in all departments, and having other expenses common to the general business, to specialize his expense account for any one department. His only method is to apply the average expense of the entire business to the department, and judge the latter by the relation between this general percentage expense and the percentage of gross profit which the department is able to realize. Of course, as in the business at large, the figures must be corrected in the light of the inventory showing.

ONE OR TWO POINTS.

Now there are innumerable other things one might say with profit in discussing these various records, but I fear that I have already exhausted your patience and I must be brief. Just a few words more: Don't be deceived as to your earnings by the failure to mark off annually a depreciation in the inventoried value of your fixtures. Ten per cent. for a soda fountain (which should also be charged up against the soda department in estimating the profits of the latter), and five for the show cases and shelving, are the customary figures. Book accounts, too, should be subjected to the same process of depreciation if you would know exactly where you stand.

And then, in charging up expenses, be careful to include everything: proprietor's salary ($1,200, say), clerks, rent, heat, light, freight, advertising, insurance, taxes, license, and the thousand and one little items that should be considered. An interest charge is not legitimate, because you have included your personal salary in the expense account, and what you realize over that is itself the interest-earnings or dividends on your investment of capital. At the end of every year draw up an itemized list of expenditures; study it carefully, compare it with those of previous years, and see if you are not spending too much money in this place or that.

Now in conclusion I want to say that the business of to-day is conducted in accordance with scientific principles. It is not without significance that the *World's Work*, a magazine whose main purpose is to interpret American life to the American people, has a department which it calls "The New Science of Business." The old rule-of-thumb method, or absence of method, was good enough in a less strenuous time, but the man who practises it to-day is out of date, and unless he mends his ways he will inevitably be thrust aside in the struggle for existence. In spite of all the pessimists say, there never was a time when such opportunities present themselves as may be found to-day, and this is as true in pharmacy as it is in other occupations. But it is just as true that there never was a time when it was so easy to fail. This is paradoxical, but it states the fact. There are plenty of prizes, but they are captured by the men who use method on the one hand, and who are possessed of brains on the other. The first is more or less easily practised; for the acquirement of the second I am unable to suggest any ready means.

A SPECIAL FORM OF CHECK FOR PAYING BILLS.

By Henry C. Blair.

Retail druggists require the simplest form of bookkeeping and anything that will simplify it is welcomed. It may therefore be interesting to carefully examine the specimen check sent herewith. It is not original with the writer, but is a careful selection made from various forms in use with the good points retained and the useless or complicated ones omitted.

It is an ordinary bank check with the addition of a line under the amount to be paid reading "in settlement of account as per statement attached," and a double column blank statement form at the left end with the wording at the extreme left as follows: "If correct endorse and deposit, no other receipt required."

By the use of this check, the most complete and safest kind of receipt is secured.

The payee saves trouble of writing receipt, paper and stamp. The check is in the form of a proper legal receipt, and saves the time and trouble of securing and filing a receipt, as the filing of the check, which everyone must do, is sufficient. Any dispute arising about amount paid on receipt given is at once settled by direct evidence of amount paid by the bank.

When bills are received by the writer they are entered on a daily calendar ten days ahead of date. Each morning the bills on the calendar for that day are paid wherever there is a discount for cash allowed, otherwise they go over for thirty days. Forgetting to pay a bill means a loss of the ten-day discount. Our checks for the past two years show a large amount of money saved in discounts, and we have saved many times the cost of printing the check book yearly, we might almost say monthly.

The only fault we have found with above described check is that some too ignorant to understand or too crafty to endorse so plain a legal receipt may cut the statement off and the check is still good. To obviate this we suggest an improved form and submit a sketch of same herewith.

THE WORK OF THE COUNCIL ON PHARMACY AND CHEMISTRY.[1]

By Samuel P. Sadtler.

The establishment by the Trustees of the American Medical Association of an unofficial body of advisers, known as the "Council on Pharmacy and Chemistry of the American Medical Association," has excited some interest on the part of the medical and pharmaceutical professions, and various statements, some considerably at variance with the facts in the case, have been made in professional journals with regard to this action. The simple facts are that the body of fifteen men, whose names appear under this heading of Council on Pharmacy and Chemistry, was gathered by the personal solicitation of Dr. George H. Simmons, the editor of the *Journal of the American Medical Association*, and the members consented to serve with him in that advisory capacity, with two distinct pieces of work indicated from the beginning. One was to advise Dr. Simmons as the editor of the *Journal*, with reference to the true character and actual nature of certain medicines, advertisements of which were offered to the *Journal*, and the other was to follow up this preliminary work by making a compilation of information with regard to reliable remedies which should be published under the auspices of the American Medical Association, and with the title of "New and Non-Official Remedies."

At the time the Council was thus constituted, some eighteen months ago, the reputable members of the medical profession particularly were beginning to demand that fakes and sham synthetics be pointed out, and the *Journal of the American Medical Association* was recognized as of such standing and authoritative position before the profession that its advertising columns particularly should be cleared, as far as possible, of this offensive material. We will probably understand this demand better if we look for a moment at the conditions that existed when this movement was started.

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[1] Read before the Philadelphia Branch of the American Pharmaceutical Association, November, 1906.

Every physician and pharmacist knows the way in which we have been overwhelmed, for some years past, with a flood of German remedies. These synthetics, distributed through American agents of the large German chemical manufacturing firms, are advertised at great expense, and with a profusion of accompanying literature, much of it giving the results of clinical tests in German hospitals, and with a United States patent (usually a product patent) already secured in advance of the introduction of the remedy. Of course with a product patent it is necessary to define the same, and we have, therefore, in most of these cases, very elaborate chemical names and even structural formula to back up the statements as to the identity of the material, although the products were introduced also with short fanciful trade names, of which I will speak specially in a moment. The chemical names, in many cases, were simply paralyzing to the average medical practitioner or pharmacist who is expected to sell the preparation. If you turn, for instance, to the well known preparation " Eucain A," you will find that the chemical name of the same is given as the hydrochloride of " benzol-n-methyltetramethyl-oxypiperidincarbonsäuremethylesters," while with " Eucain B" we get off with a name of half the length, namely, hydrochloride of " benzoylvinyldiacetonalkamins," or, if we turn to one of the newer substitutes for cocaine, named " Alypin," we have as the chemical synonym, " monohydrochloride of Benzoyl-1.3 tetramethyl-diamine-2 ethylisopropylic alcohol." Examples might be multiplied to illustrate this series of impossible chemical names, the result, of course, being that in all cases the special trade name, copyrighted by the German manufacturer or his American agent, came into immediate use, so that the article was always asked for and supplied under that name, but it was soon found that some of these trade-marked proprietary names represented the claims which different manufacturers made for one and the same article, thus Urotropine, Formin, Aminoform, and later Cystogen, all of them represent hexamethylenetetramine, a chemical compound now recognized as official in the U. S. Pharmacopœia under its proper chemical name. The number of these foreign made synthetics during recent years has grown enormously, so that several small handbooks have been issued, simply to furnish an enumeration and explanation of this class of compounds.

It can be readily seen, therefore, that this state of things could not but have a bewildering effect upon the physician to whom these new and strongly recommended preparations were brought by the agents of the dealers or to whom they were sent in trial samples, and equally paralyzing upon the retail pharmacist who is obliged to keep all of these newer preparations in stock, that might, by any chance, be called for by the physician's prescriptions. It was not possible for the individual practitioner to make a special study of this whole field, which would really be needed to enable him to make a proper selection, and, therefore, he felt obliged to turn to some authoritative expression of opinion on the subject.

It is true the Committee of Revision of the U. S. Pharmacopœia, in making up the text for the Pharmacopœia recently issued (Eighth revision U.S.P.), made a selection of some eighteen of the most important of these synthetic chemical compounds, giving, of course, full accounts of their chemical identity and tests for purity, and, in all but one or two cases, selecting a chemical name, rather than to accept any proprietary name, but as the number continued to increase, and as the reports with regard to their value in actual practice came in, their relative merits changed appreciably, and some organized effort was certainly needed to make a selection of a limited number of the most valuable ones, and furnish the information with regard to them.

When we turn to synthetics of American manufacture, with the exception of a few products, and a very few, of some of our established manufacturing firms, the so-called American synthetic was either a mixture of substances, or else an out-and-out fake. Most of us will recall the showing up of the acetanilid mixtures a year or so ago, most of which had been calling themselves synthetics and, besides having trade-marked proprietary names, had, in some cases, attempted, after the model of the German synthetic, to give chemical synonyms. In one case which came within my personal knowledge, a very elaborate patent specification, regularly issued for a U. S.

Patent, was submitted, describing in detail the method of manufacture of a product, which, on analysis, proved to be simply a mixture of well-known ingredients, in which mixture the reactions of the patent had certainly never taken place, yet it was sold and is being sold as a definite synthetic, with appropriate name and chemical formula on the label.

Illustrations of the fake synthetics put out in this country may also be found in the last number of the *Journal of the American Medical Association*, page 1500, in which not only is the claim made that the substances sold are definite synthetics, but definite and exact chemical formulas are given for the same, in one case accompanied by a most picturesque and perfectly impossible graphic formula in addition.

If this represents the state of things that existed with reference to substances claimed to be synthetics, what was it when we came to proprietary mixtures with trade-marked word-names, and absolute secrecy as to composition, this secrecy being defended on the ground that valuable proprietary rights might be infringed if the public were told the exact composition? It is hardly necessary to ask the question as to where this kind of a thing leaves the doctor. The proprietors of the remedy may change the composition from time to time, and in some cases they boldly acknowledge that the composition of the remedy has been changed, with no word of information as to strength or exact proportion of the ingredients, and in many cases with absolute falsity of statement as to ingredients present.

With this general survey, therefore, of the conditions that existed up to the time the Council was formed, it will be seen that there was the greatest need for improvement, and that the physician, in self-defence, was obliged to ask for some help in this matter.

Shortly after the organization of the Council on Pharmacy and Chemistry, and possibly in part antedating its organization, came the popular outside efforts at reform in the matter of medicines, of which the best-known examples were the publications of the *Ladies' Home Journal*, and later of *Collier's Weekly*. The work of Mr. Adams in this latter journal was certainly very effective in opening the eyes of the public to the condition of things with regard to many of the so-called "Proprietaries." It is true that these *Collier's Weekly* articles only attempted to deal with the worst of these proprietaries, such as the "boozes" and the "dopes;" but this work was, however, of the greatest importance and value, as it did much to bring about a public sentiment, with the result that both State and National legislation has followed. When our recently enacted Pure Food and Drugs Act goes into effect on January 1st, 1907, we will know the per cent. of alcohol, morphine, opium, cocaine, chloral hydrate or acetanilid contained in any of these proprietary mixtures.

Not only this, but in the National Food and Drugs Act we find the following statement in Section 7:

"That for the purpose of this act an article shall be deemed to be adulterated in case of drugs:

"(1) If, when a drug is sold under or by a name recognized in the U. S. Pharmacopœia or National Formulary, it differs from the standard of strength, quality or purity as determined by the test laid down in the U. S. Pharmacopœia or National Formulary, official at the time of investigation, provided that no drug defined in the U. S. Pharmacopœia or National Formulary shall be deemed to be adulterated under this provision, if the standard of strength, quality or purity be plainly stated upon the bottle, box or other container thereof, although the standard may differ from that determined by the tests laid down in the U. S. Pharmacopœia or National Formulary.

"(2) If its strength or purity fall below the professed standard or quality under which it is sold."

This very important provision insures that articles which are labelled "U.S.P." or "N.F." without other qualification, must absolutely conform to the standard of strength and purity of those two publications, which are hereby given official recognition at the hands of the Government. If, on the other hand, the article is distinctly labelled to be of another strength than the official, it may be sold, but its strength or purity dare not fall below the professed standard or quality under which it is sold.

It is obvious that we have here very important aids in maintaining the purity of preparations to be used in medicine, whether they be official or proprietary articles.

When the Council on Pharmacy and Chemistry was constituted, effort was made to have pharmacists, chemists and pharmacologists all represented, and the Council was divided for detail work into three sub-committees: Committee "A," consisting of five members, being a Committee on Pharmacy, and to these were referred all purely pharmaceutical preparations for special report when necessary; Committee "B," being a Committee on Chemistry, consisting of five members, to whom were referred all questions of chemical analyses and chemical composition, and the verifying of properties of synthetics and other chemical compounds; and Committee "C," consisting of five members, all of whom were medical men, a Committee on Pharmacology, and to these have been referred all questions as to the nature of drugs, and the therapeutic actions of the various preparations which have been brought to us.

Circulars were prepared, which were sent out to all prominent American pharmaceutical manufacturers, as well as to the agents of the German synthetics and chemical preparations, and publicity was given to this circular also by sending it to most of the prominent medical and pharmaceutical journals. In this circular a number of rules governing the admission of articles to the book "New and Non-Official Remedies," and explanatory comments upon the same, were published. In addition to this, representatives of a number of the most prominent American manufacturing houses met the Council in conference at Cleveland, Ohio, in September, 1905, and in that way the ground was laid for active coöperation.

The result is that the Committee has had to date some 600 or 700 individual articles brought to its attention, in all cases accompanied by samples and whatever literature had been published in connection with them. Forms of labels and circulars were also submitted to the Council, to allow them to judge as to whether the rules which had been sent out were being complied with, so as to justify the admission of these articles to the proposed book. It can readily be seen that a vast amount of work was involved in the study of these many preparations, and the sifting of testimony with regard to them.

A weekly bulletin has been sent out almost since the organization of the Council, which at times covers a dozen or more pages, and the votes of the Council are asked for each week, upon a long list of reports from sub-committees and the Secretary of the Council.

The first effect of the examinations made by the members of the Council was in the pruning of the advertising pages of the *Journal of the American Medical Association*, and it is believed that for months past these have been practically free from the advertisement of any improper or deceptive preparation.

In the meanwhile, the work of preparing the text for the proposed book has been going on, and within the last few months portions of this text have been published in a tentative way, in the weekly issue of the *Journal of the American Medical Association.* These published descriptions will show the physician the general character of the book, and will give him also reliable information, the result of careful inquiry, and in some cases, of critical analyses, made on the part of the members of the Council.

It is possible, of course, that mistakes have been made in some cases, but it is believed that the mistakes are more generally those of omission rather than of commission, and where such mistakes are clearly pointed out, the Council stands ready to correct them.

When this movement began, the support which it had from the medical profession, while very positive in some quarters, was not at all general, probably because of lack of information on the subject, but it may be safely said, as was shown by the testimony at the meeting of the American Medical Association at Boston, in June last, that the support of the large majority of the members of the medical profession throughout the United States has been given it, and we believe also that back of that stands the public opinion and support, which has very rapidly developed within the past year, because of the great publicity given to the question of proprietary medicines and the rights of their manufacturers to furnish to the doctor and the public mixtures of unknown composition, possibly dangerous in their actual administration.

I am certain that none of us realize the wide-reaching results which the recently enacted Pure Food and Drugs Bill will have, in the way of correcting many of the worst of these abuses, and curtailing the field for the exploitation of some of these proprietary medicines.

THE EFFECT OF PUBLICITY ON THE STANDING AND USE OF NOSTRUMS.[1]

BY CHARLES H. LAWALL.

The organization of the Council on Pharmacy and Chemistry of the American Medical Association in the spring of 1905 was the initial step of a movement on the part of two great professions, *i. e.*, Pharmacy and Medicine, to throw off a burden under which the professions themselves and the great American public had been staggering for years and which fast increasing weight was becoming intolerable.

"The Nostrum Evil," as it has rightly come to be called, has grown so insidiously, partly because of the cowardice and more particularly because of the laxness of the two professions which are best able to cope with it and combat it successfully, that, at the present time, it constitutes a veritable ogre Frankenstein, whose crimes are no less atrocious than those of its mythical prototype, but whose form has become so familiar that there are still those who would defend the system of charlatanism and fraud with which it has enveloped itself.

Although more than a year has passed since the opening blow was struck, and although many powerful thrusts have been made by the two-edged rapier of scientific investigation and publicity, the hydra-headed character of the evil has shown the necessity of extra-herculean efforts which would tax the ability of that hero, the accomplishment of whose twelve labors entitled him to a well-earned immortality.

Originating as it did in the spring of 1905, backed by the American Medical Association, with a special department in the official journal of the Association to give its findings publicity, the first blow that was struck was aimed at an evil which affected both physician and patient—the list of acetanilid mixtures which previous to that time had been masquerading in fancied security under high-sounding titles and accompanied by extravagant and for the most part baseless claims. The publishing of the facts in the cases of such preparations as ammonol, antikamnia, phenalgin, salacetin and others directed the attention of the entire medical profession to conditions which had been known to some of its members for a long time, *i.e.*, that, instead of being synthetic compounds with any valid claim to originality, they were mixtures of varying proportions of acetanilid with an alkali such as sodium bicarbonate or ammonium carbonate, with or without the addition of caffeine to aid the therapeutic effect.

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[1] Read before the Philadelphia Branch of the American Pharmaceutical Association, November, 1906.

Artistic mysticism is the appropriate designation which has been accorded to the methods by which fanciful names and ridiculous claims were so interwoven as to give an air of plausibility calculated to deceive the practitioner who can not be expected to distinguish the high sounding spurious synthetic names from the plain everyday titles of the component parts. With the striking of this first blow came the open declaration of war upon the council and its supporters from the various interests both directly and indirectly affected. To the shame of both professions it must be admitted that there were not lacking journals where the enemies of reform could entrench themselves and oppose the work of the Council.

Accusation and recrimination became the order of the day. Unofficial exposures were made of hosts of other similar preparations. The department of Pharmacology in the *Journal* was thrown open for free discussion of a subject which previous to that time had been studiously avoided by those who had interests at stake and concerning which few journals would risk the publication of any facts which might affect or jeopardize their advertising interests. From every quarter came the demand to make a searching investigation of the subject in order that the wheat might be separated from the chaff, and that the correct and intelligible composition of many of these questionable preparations might be placed in the hands of the practicing members of the profession upon whom would then rest the responsibility for their further employment in medicine.

In October, 1905, Samuel Hopkins Adams, a forceful magazine writer, aided by *Collier's Weekly*, took up the battle and carried it directly before the laity in a series of articles entitled "The Great American Fraud," in which nostrums like Liquozone, Peruna, and others were pictured as they really exist when divested of the claptrap of suggestive and misleading statements written by direct lineal descendants of Mendax I. In this series of articles was published the reason for the silence of the daily newspaper press upon all matters pertaining to the fraudulent character of these preparations —the existence of the famous "Red Clause," whereby an advertising contract could be cancelled in case of effective opposition by legislative enactment.

Following close on this work, which had been aided by similar articles by other authors in the *Ladies' Home Journal*, came a crushing blow, which caused such a scurrying of vermin in the wainscoting, a clanking of chains in forgotten cellars and a rattling of dry bones in secret chambers as had never before been heard. It was the publication of the list of membership in the Proprietary Association of America, and be it to the credit of many well-known firms that immediate withdrawal from this unsavory alliance was the first order of business for some time immediately following this publication. A glance at the list as first published shows the catholicity of commercial interests, for here are allopath, homœopath, eclectic and therapeutic buccaneer under the same umbrella of unity of interests, which unity seems to be the dissemination of misinformation and the hoodwinking of the public.

Men of standing in the affairs of the National Associations and others entered the arena and contributed liberally to the campaign of education which had begun in earnest. Determined opposition to the work of the Council, which was expected at the Boston meeting of the Association, fell flat and the Council began with renewed vigor to carry out its mission.

In June, 1906, what was probably the crowning blow which has thus far been struck was delivered by the successful passage of the Pure Food and Drugs Act, the manifold provisions of which, regarding labeling and publishing unwarranted and extravagant claims, will cause the inauguration of a new era in the history of the conflict.

The most recent official reports have dealt with three preparations, Somnos, Uron and Thialion, of which the latter two had been marketed by the customary cuttlefish-like methods of employing words to conceal the truth. In the case of Somnos the firm manufacturing it have protested against the decision of the Council and have admitted expert evidence in support of the position they have taken, so that this matter is far from being settled at the present.

Such is, in brief, the history of the campaign up to the present time. Now the question arises, what effect has this publicity already had and what effect will it have in the future upon the standing and endorsement of the nostrums concerned? If we go by the advertisements in the daily papers the effect is scarcely noticeable, for when we open the pages of almost any one of them we are confronted with the familiar faces and testimonials of those who owe their lives to the wonderful curative powers of these selfsame remedies which have been so unsparingly handled by Mr. Adams in *Collier's Weekly.* It is true that Mr. Hartman has announced that after years of patient experimenting he has been able to add a small amount of a laxative drug to Peruna which removes from it the slanderous imputation that it is purely a "booze," although the percentage of alcohol has not been reduced; and the death of Lydia Pinkham has at last been announced to the public in the advertisements of that nostrum with the information that, although the dear old lady has long since passed to her reward, her work of personally attending to the complaints of suffering womanhood is still attended to by her daughter-in-law, although why the information should have been withheld for so many years is not vouchsafed. The greatest obstacle at the present time is the continued opposition of the general lay press to the work of reform, the information in *Collier's Weekly* having reached but a small proportion of the users of this class of preparations. The *Literary Digest* is one of the most recent periodicals to free itself from the imputation of being biased, by publishing extracts from Mr. Adams' papers, which are now published in the form of a booklet and sent out by the *Journal of the American Medical Association* upon the receipt of the nominal price.

It is probably too soon to express an authoritative opinion on the question as to the effect of all this publicity, but there are some considerations which must not be lost sight of at this stage of the work. The facts already published should not be allowed to lose their potency by remaining undisturbed in the records of the literature of the time. There is a young and advancing army of students to whom these facts should be presented as necessary for them to know to keep from falling into the evil paths of many of their predecessors.

The physician of the future who prescribes and the pharmacist who dispenses a nostrum of this character should not do it in ignorance of the true facts, as has been so often done in the past, but should be warned in no uncertain manner, so that the responsibility for their continued use may be placed where it belongs. It is the province of the Council of Pharmacy and Chemistry to point out and recommend; the individual members of the medical and pharmaceutical professions must then proceed to act upon these recommendations.

It must also be remembered that mankind has always shown a tendency to worship new and strange gods. The words of P. T. Barnum, that "the American people like to be humbugged," were never more true than they are to-day, and the disciples of Ananias who write the literature of most of the nostrums have never had more abundant opportunity to ply their arts upon a willingly gullible public.

Intelligibility of nomenclature should be insisted upon as a primary requisite in the case of new preparations. St. Louis, the home of medical charlatanism and pharmaceutical fakery, has already furnished names enough which might with equal propriety apply to parlor cars or summer-resort boarding-houses.

There is not enough attention paid in the medical schools to prescription writing, practical therapeutics and incompatibility. Most education along medical lines seems to reach diagnosis and then fall short. A recent case in point known to the writer was where a practitioner used almost every known appliance and aid known to diagnosticians, including a blood-count and a cryoscopic test of the urine, and then prescribed a nostrum with the composition of which he was unacquainted.

If the publicity attendant upon the nostrum evil has no other effect than to direct medical and pharmaceutical education to lines which have heretofore been neglected, it will serve the ultimate purpose of bringing both of the professions to a realization of the responsibility which they jointly share in the discouragement of conditions which are detrimental not only to the professions themselves but to their constituents, the American public.

WHY PHARMACISTS SHOULD SUPPORT THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION.[1]

By John K. Thum.

To be deserving of the title pharmacist the aspirant should be a scientist, and being such he must realize that the end for which the Council on Pharmacy and Chemistry of the American Medical Association is striving, is the truth! It has long been known to well-informed pharmacists that the literature put out in connection with many of the newer remedies is not only misleading as to their composition, source of origin, and therapeutic properties, but not a few are of an absolutely fraudulent nature. A few recent reports of the investigations of the Council, published in the *Journal of the American Medical Association*, of the attempt of manufacturers to mislead credulous physicians illustrates forcibly the need of watching manufacturers. That there is a legitimate field for the discoverer and manufacturer of medicinal remedies is plain to every fair-minded man, but he must not be allowed to prey upon humanity like a vulture.

The work of the Council can be utilized by up-to-date pharmacists in educating and informing physicians in matters pharmaceutic instead of allowing smooth-tongued detail men to act as their pharmaceutical mentors. Pharmacists should assert themselves and make physicians appreciate more and more the true standing of the newer remedies, and the possibilities of the Pharmacopœia and National Formulary. Physiologic or therapeutic results obtained by the use of many of the newer remedies can ofttimes be obtained just as readily by a judicious use of the drugs and preparations contained in these two noted books—scientific books which for careful selection and comprehensiveness cannot be equaled.

When physicians, as often happens, come to the pharmacist for information about drugs and medicinal preparations contained in the Pharmacopœia and National Formulary, they naturally expect him to be able to give them all of the desired information, not alone pharmaceutical but also chemical, etc. If physicians inquire for information about new and non-official remedies, the pharmacist, if he is progressive enough, should be able to aid him very materially if he has kept and is constantly keeping himself in touch with the work of the Council. When the Council publishes a report of a remedy and gives its reasons for not favoring it for a place on its list of new and non-official remedies, the pharmacist should know about it. All this knowledge, which he can easily obtain by a faithful perusal of the published results of the work of the Council, is now appearing in the *Journal of the American Medical Association.* If the average pharmacist is qualified to give physicians what they desire, well and good; if not, then it must resolve itself into a question of the survival of the fittest among them: there will be a separation of the true pharmacist from the mere seller of drugs, patent medicines and so forth. There will be professional men and tradesmen. To regain the good-will and respect of medical practitioners is the only hope the pharmacist has of making true pharmacy triumph over the spirit of commercialism that pervades it at present and is dragging it down into the mire of mere trade and shopkeeping.

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[1] Read before the Philadelphia Branch of the American Pharmaceutical Association, November, 1906.

The organization of the Council shows plainly that medical practitioners are alive as to protecting themselves, and pharmacists can best demonstrate their right to protection by co-operating with the Council whenever possible and offering friendly criticism when honestly thought justifiable. The pharmacist owes it, not only to himself, not only to the doctors, but to the public at large who must, in the last analysis, depend on him to protect them from unscrupulous manufacturers of medicinal remedies. In this country the law holds the pharmacist responsible when he dispenses a prescription containing a lethal dose; if the law places the pharmacist between the physician and patient in this particular regard why should he not be held responsible for dispensing harmful nostrums? Moral law demands that he should be ever on the alert to safeguard the public health.

The work of the Council has resulted in a more widespread interest on the part of physicians in the Pharmacopœia and National Formulary. If this were the only good the Council had brought about it would be sufficient reason for the unqualified endorsement and support of pharmacists. When the interest of physicians becomes more awakened and general as to what these books, rightly used, can do for them, then pharmacy will surely come into its own, provided the members of the profession prove themselves worthy.

A SIMPLE SYSTEM FOR PERSONAL ACCOUNTS.

BY E. FULLERTON COOK.

The system of recording sales as herein described, while applicable, through slight modifications, to a large general business, is primarily intended to supply the need of a retail dealer whose chief object in " keeping books " is to be able to render bills to his customers regularly and accurately, with the least amount of labor.

It may not be amiss to briefly describe the usual method adopted, which is generally known as " single-entry bookkeeping."

Two books are used: a day-book and a ledger. The day-book is placed in some convenient place in the store, and into it are written, by the various clerks or the proprietor, a record of the sales, which are to be charged, together with the customer's name. The same book is used for a credit when a bill is paid or " cash on account " is received.

At stated periods, usually once a month, the proprietor will post these entries, made in the day-book, to the debit or credit, as the case may be, of the customer's account in the ledger, frequently writing out the items in full.

When all of the entries from the day-book have been made in the ledger, itemized bills or statements are prepared from the ledger accounts and sent to each customer.

The system suggested as a substitute for this well-known method of keeping personal accounts involves the same principles, but lessens the amount of work required, and it is believed will decrease the losses and annoyances due to the failure of a clerk to take time to go to the day-book for the making of a record during a rush of work and afterward forgetting to do so.

In the simplest form it consists of a sale-slip, in pads, which may lie by the cash register or drawer, or be carried in the pocket, and when a sale is made which is to be charged, upon it is entered first the date, customer's name and address, and following it the items of the sale. The slip is then " rung up " in the register under the " charge " key. A credit is made in the same manner, although the slip should be of a different color and have " credit " printed upon it, and then be placed in the register under the " credit " key.

Many variations in the form of these slips are possible. If desired, they may be secured in duplicate or triplicate, and in the latter case a copy usually goes to the customer with the purchase. But for most purposes of a comparatively small business, the single copy is sufficient and satisfactory. Numbering the slips consecutively is valuable as a means of checking, and may be readily done with a prescription-numbering machine.

At the close of the day the slips are removed from the cash register by the person who has that part of the business in charge, he noting the fact that they correspond in number to the charges or credits rung up and also that no numbers are missing, if they have been numbered. His next duty is to post the accounts in his ledger. For this purpose a special arrangement has been devised for the purpose of avoiding the copying of the items of the charge with its subsequent loss of time and added work.

A vertical file is provided, of the same size as the slip or slightly larger, a standard, 3 x 5 inches, size is large enough, or 5 x 7 inches if preferred. The individual folder has a printed form on the outside for entering the date and amount of the purchase, a device for holding the slips, and they stand, in the case, on end, opening from the end, each having a raised tab for the name of the customer.

In posting the sales of the day, the desired folder is lifted from the card-index case in which they are arranged alphabetically, the date and amount of the sale written upon the outside, and the sale slips put into place and the folder returned to the case, thus posting the item; each slip being treated in the same way.

From the record upon the outside may readily be learned the amount which the customer owes, and when it is desired to make out an itemized bill it may be done from the original slips.

As the bills are made out the slips are retired, in regular alphabetical order, to a filing device which makes the slips of the month into a book, which may readily be referred to, while the total sum of indebtedness and credits remain upon the card, and are replaced in the case ready for the succeeding month. Some of the advantages of the system are:—

First.—For every sale, cash or charge, the clerk must go to the cash-drawer or register and thereby be less apt to forget to make a charge or credit upon the day-book.

Secondly.—The ledger accounts are always active, any dead accounts may be immediately removed from the card-index case which gives the same advantages as a loose leaf ledger.

Thirdly.—And principally, the items of the charge need not be copied in the ledger, whereby time and work is saved.

NEW ESSENTIAL OILS.[1]

Two oils which had not been produced up to the present were sent to us for approval by the Syndicat du Géranium Bourbon. They are the oils from *Evodia simplex* Cordem., and from *Pilea* spec. nov. Both plants are indigenous to Réunion and grow there in the wild state.

Oil of Evodia simplex.—This plant belonging to the family Rutaceæ is closely allied to *Toddalia aculeata* Pers., which has essential oil[2] both in the leaves and in the bark of the roots. The yellow-green, mobile oil has a pleasant, not obtrusive odor. The fact that the oil strongly reminds of Réunion geranium oil, is, according to the manufacturer, due to the use of stills employed in the geranium oil production. $d_{15°}$ 0·9737; a_D — 13°4′; acid no. 2·1; ester no. 16·4; ester no. after acetylation 63·3. The oil forms a clear solution in 0·9 vol. 80 per cent. alcohol, with a slight separation of paraffin, but does not completely dissolve in 10 vol. 70 per cent. alcohol. In a freezing mixture it becomes cloudy with separation of a very few colorless scales, but does not solidify. After it had been seen that up to about 190° (ordinary pressure) nothing distilled over, the oil was fractionated in vacuo (3 mm. pressure), when it boiled between 90 and 140°. The portion passing over on repeated distillation from 97 to 100° (2·5 mm. pressure) ($d_{15°}$ 1·006; a_D — 4°) had a pronounced odor of eugenol methyl ether. The further examination showed that this body was actually present. The oxidation of 6 g. of this oil with a solution of 18 g. permanganate in about 400 c.c. water gave a fair yield of veratric acid, colorless thin small needles of the m. p. 177·5°. Repeated recrystallization did not raise the melting point further.

From the last fraction of the oil a body crystallized out which after recrystallization from 90 per cent. alcohol formed long colorless needles, which proved to be a paraffin by their difficult solubility in alcohol, and their indifference towards concentrated nitric acid. Its melting point lay between 80 and 81°.

Eugenol methyl ether and a paraffin melting at 80 to 81° have, therefore, been found by us in the oil of Evodia simplex Cordem.

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[1] Abstract from the Semi-annual Report of Schimmel & Co., October, 1906.

[2] Gildemeister and Hoffmann, "The Volatile Oils," p. 460.

Pilea Oil.—The still unnamed species of *Pilea* from which this oil had been distilled belongs to the Urticaceæ, a family whose members had not up to the present yielded an essential oil. The water-white very mobile oil had a turpentine-like but not disagreeable odor. It contains a small quantity of pinene, but it is still undecided what the bulk of pilea oil consists of.

CORRESPONDENCE.

CULTIVATION OF LICORICE.[1]

My Dear Dr. Kraemer:—While the importance of licorice root as an article of commerce in this country is well-known, there has been but little opportunity to become directly informed respecting the plant itself, at least until within a very recent period.

Growing wild, over vast areas in its native (and distant) countries, we have accepted what has been sent to us as all licorice root, and a plant with its parts in their entirety by which an accurate study could be made, has been almost impossible to obtain.

My father, as you know, was most deeply interested in everything pertaining to the subject, and having observed for himself on the spot all the various processes through which the root passes from digging to final shipment, it became his conviction that could the root be grown in this country, there would be not only a very great benefit to the consumers, but also a new industry provided which in due time would prove a source of profit to the grower.

For the purpose of studying the plant at close range, he obtained a number of cuttings, a few of which were planted in the yard of our home; the average city back yard is not calculated to afford the best conditions under which to introduce and nourish a new plant, so far removed from its usual surroundings, but being hardy by nature, it was thought that if it showed any tendency to grow under such unfavorable conditions, much could be reasonably expected of it when propagated with care, in soil adapted to its needs.

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[1] This communication was received some weeks ago, as also the specimen of licorice plant, grown by the late Henry N. Rittenhouse, which has been added to the collections of the Philadelphia College of Pharmacy.

I cannot recall just how long since the first plants were put down, probably fifteen years ago, but most of them are still alive and have produced new ones; a few more were added about two years later which have also done well, and from some one of them a new one came which in turn produced the specimen now in your hands.

I judge the oldest part of this plant is from four to six years old; the small runner (with the sprout at the end) is about two years old; while those sprouts at the extreme end of the longest runner made their appearance last spring (1906).

Knowing that on a commercial basis, the *first* crop of marketable root would be obtained at the end of the third year, the above named lengths of time and the quantity of actual root obtained do not seem to promise large returns; but, considering that these plants have lived and made their way of their own accord in a layer of common dirt, with a hard massy clay bottom, under the bricks of the pathway, without any cultivation or transplanting, only ordinary care in summer and none at all in winter, I think the present specimen not only gives us a very good sample of what an entire plant looks like, but of what it is capable when the conditions are made to suit it; and the conditions would not have to be at all severe to enable it to produce the equal of any that is brought here, and that too, within the normal time.

As I said, this specimen is the outgrowth of some one of the original plants; the lower ends of the tap-roots (the real licorice root) were so tightly embedded in the clay, and so deep, that I could not get them out for their entire length; I left probably a half of the longest one in the ground; had the soil been appropriate, there is no doubt that for the length of time the plant has grown, the yield of root would have been excellent.

Directly from the parent plant, the runners have spread until the one with the small sprout forced its way up to the surface between the bricks; the next one (with the bud on the end) I found in good position to come to the surface next spring, and the longest one had worked its way in almost a straight line just under the bricks for its entire length, until it too found an opening to come up.

Notice at intervals the young roots on the lower side of this long runner, they also are the real root and are the points at which new shoots would appear when the plant is free from obstructions.

From this one specimen it is plain to see how the plant spreads, reproduces itself and lives with even little to favor it, very much the same as it exists in its native regions; and having also seen it under cultivation myself, there is no doubt in my mind that it is possible to grow licorice root in the United States with entire success.

Philadelphia. DANIEL S. RITTENHOUSE.

BOOK REVIEWS.

SECOND REPORT OF THE WELLCOME RESEARCH LABORATORIES AT THE GORDON MEMORIAL COLLEGE, KHARTOUM. By Andrew Balfour, Director, Department of Education, Sudan Government, Khartoum, 1906.

As this is the first of the reports which have been received for review in this JOURNAL it may be desirable to call attention to the functions of the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum. These are (*a*) To promote technical education. (*b*) To promote the study, bacteriologically and physiologically, of tropical disorders, especially the infective diseases of both man and beast peculiar to the Sudan, and to render assistance to the officers of health, and to the clinics of the civil and military hospitals. (*c*) To aid experimental investigations in poisoning cases by the detection and experimental determination of toxic agents, particularly the obscure potent substances employed by the natives. (*d*) To carry out such chemical and bacteriological tests in connection with water, foodstuffs, and health and sanitary matters as may be found desirable. (*e*) To promote the study of disorders and pests which attack food and textile producing and other economic plant life in the Sudan. (*f*) To undertake the testing and assaying of agricultural, mineral and other substances of practical interest in the industrial development of the Sudan.

The present volume contains papers on the following subjects:

(1) Mosquito work in Khartoum and the Anglo-Egyptian Sudan generally.

(2) Biting and various insects other than mosquitoes.

(3) On some blood-sucking Diptera from the Anglo-Egyptian Sudan collected during the year 1905, with descriptions of new species. By Ernest E. Austen.

(4) A second report of the mosquitoes or Culicidæ of the Sudan. By F. V. Theobald.

(5) Human and animal pests. By F. V. Theobald.

(6) Vegetal pests. By F. V. Theobald.

(7) A hæmogregarine of mammals. By H. Balfour.

(8) The Leucocytozöon of mammals. By L. Muris.

(9) Changes in the erythrocytes of the Jerboa.

(10) Typanosomiasis in the Anglo-Egyptian Sudan.

(11) Routine work: List of examinations made; Notes on communicable diseases and parasites.

(12) Miscellaneous notes: Blood examinations; Bilharziosis.

(13) Report of the traveling pathologist and naturalist Dr. Sheffield Neave.

(14) Report of the Chemical Laboratory. By William Beam.

It is impossible to abstract these papers in a review. The work comprises more than 250 pages and with over 100 illustrations, some of which are colored, contains a vast amount of information on the subjects mentioned and is a valuable contribution to science.

From the fact that these laboratories are located in the countries where the conditions prevail which conduce to the development of certain infectious diseases, the researches should be of special value and interest.

ARBEITEN AUS DEM PHARMACEUTISCHEN INSTITUT DER UNIVERSITAET BERLIN. Herausgegeben von Dr. H. Thoms, Professor und Leiter des Pharmaceutischen Instituts der Universität Berlin. Dritter Band. Umfassend die Arbeiten des Jahres 1905. Mit 7 Textfiguren und 1 Tabelle. Urban & Schwarzenberg: Berlin, N., Friedrichstrasse 105b. 1906.

In this publication of 334 pages is given a number of papers embodying original work. The titles and names of authors are given for the benefit of those of our readers who may be interested in the subjects considered:

(1) The Determination of Nitrites and Nitrates by the Electrolytic Oxidation of Ammonia in Connection with Copper Oxide. By W. Traube and A. Biltz.

(2) Electrolytic Nitrite Formation. By A. Schönewald.

(3) The Action of Oxygen upon Aliphatic Amines in Connection with Copper. By W. Traube and A. Schönewald.

(4) The Action of Aldehydes upon Orthodiamine of the Pyridin Series. By W. Traube and W. Nithack.

(5) Synthesis of 3 Methylhypoxanthins. By W. Traube and F. Winter.

(6) Some Derivatives of 4-5 diamino-6-oxy-2-thiopyrimidin. By F. Winter.

(7) The Use of Potassium-bismuth-iodide Solution for the Estimation of Alkaloids. By H. Thoms.

(8) Some Studies on Tannin. By H. Thoms.

(9) Caryophyllin. A Preliminary Paper. By J. Herzog.

(10) The Different Extraction Methods of Drugs in the Preparation of Tinctures and Extracts. By J. Herzog.

(11) The Preparation of Extracts without Evaporation. By J. Herzog.

(12) New Medicaments for 1905. By J. Hochs.

(13) An Examination of the Lecithin of the Market. By G. Fendler.

(14) Maretin. By F. Zernik.

(15) Bioferrin. By F. Zernik.

(16) Stovain. By F. Zernik.

(17) Isopral. By F. Zernik.

(18) Eumydrin. By F. Zernik.

(19) Thermiol. By F. Zernik.

(20) Floricin Preparations. By G. Fendler.

(21) Urocitral. By F. Zernik.

(22) The Action of Exodins. By F. Zernik.

(23) The Preparation and Testing of Chininum arsenicicum. By R. Lucius.

(24) Phenacetin adulterated with Parochloracetanilid. By C. Mannich.

(25) Noordyl Drops. By F. Zernik.

(26) Pink Pills. By F. Zernik.

(27) Slankal. By F. Zernik.

(28) Fucol. By G. Fendler.

(29) Dalloff Tea. By H. Thoms.

(30) Antipositin. By F. Zernik.

(31) Vial's Tonic Wine. By F. Zernik.

(32) Uten's Antiepileptic. By F. Zernik.

(33) Kaiser-Borax. By F. Zernik.

(34) Frank's Gallstone Remedy. By F. Zernik.

(35) Alvatunder. By F. Zernik.

(36) Melioform. By F. Zernik.

(37) Leukrol. By F. Zernik.
(38) Hämostypticum Brüninghausen. By F. Zernik.
(39) Kuhnke's Medicine. By F. Zernik.
(40) Oliophen. By F. Zernik.
(41) Pastor Felk's Plant Tonic. By F. Zernik.
(42) Capsula Duplex Stomachica Bouri. By F. Zernik.
(43) Bioson. By Artur Sörmann.
(44) Sterner's Oriental Powder. By F. Zernik.
(45) Iodvasogen and Iodvasoliment. By F. Zernik.
(46) Uricedin "Stroschein." By F. Zernik.
(47) Muglitzol. By F. Zernik.
(48) Smith's Gloria Tonic. By F. Zernik.
(49) Lazarus Soap. By F. Zernik.
(50) Nalicin. By F. Zernik.
(51) August Schrader's Plaster. By F. Zernik.
(52) Winther's Nutrient Salts. By F. Zernik.
(53) Frick's Rheumatikon. By F. Zernik.
(54) Retterspitzwasser. By F. Zernik.
(55) Cyllin. By J. Kochs.
(56) Dr. A. Oetker's Salizyl. By J. Kochs.
(57) D. Zinsser's Lysol Pills. By J. Kochs.
(58) Eusemin. By J. Kochs.
(59) Anticelta Tablets. By J. Kochs.
(60) Migraenol. By J. Kochs.
(61) Kaiser-Natron. By J. Kochs.
(62) Antidiabetikum Stock. By J. Kochs.
(63) Electricum. By J. Kochs.
(64) Reichel's Wachholderextract. By J. Kochs.
(65) Korber's Remedy for Tuberculosis. By J. Kochs.
(66) Stege's Herb Wine. By J. Kochs.
(67) Hébesin. By J. Kochs.
(68) Thymidol. By J. Kochs.
(69) Dr. Lauser's Stomach Powder. By J. Kochs.
(70) Dr. Lauser's Cough Drops. By J. Kochs.
(71) Perox o Cop. By J. Kochs.
(72) Determination of Methylalcohol in Preparations containing Ethyl alcohol. By G. Fendler.
(73) The Secretion of Butyrospermum Parkii or so-called "Karitegutta." By G. Fendler.

(74) Pottwaltranes. By G. Fendler.

(75) The Fatty Oil from the Seeds of Manihot Glazionii. By G. Fendler and O. Kuhn.

(76) Examination of Different Soaps. By J. Kochs.

(77) Mistelkautschuk. By G. Fendler.

(78) The Natural Mineral Water of Carabana. By A. Walter.

(79) The Determination of Foreign Coloring Matters in Fats. By G. Fendler.

(80) The Determination of Boric Acid. By G. Fendler.

(81) A new Steam and Pressure Percolator. By W. Lenz.

(82) Apparatus for Determining Melting Points; and new Funnel for Filtration under Pressure. By W. Lenz.

(83) A Holder of Test-Tubes for Demonstration Purposes. By H. Thoms.

PHILADELPHIA BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

NOVEMBER AND DECEMBER MEETINGS.

The stated meeting for November of the Philadelphia Branch of the American Pharmaceutical Association was held on the evening of Tuesday, November 6, 1906, in the College of Physicians, and was devoted to a discussion on "The Work of the Council on Pharmacy and Chemistry of the American Medical Association."

The meeting was attended by some forty members and visitors, all of whom manifested a keen interest in the subject matter under discussion.

Before taking up the scientific business of the evening an election for a member of the Council of the American Pharmaceutical Association was held. This resulted in the selection of M. I. Wilbert as the representative of the branch in the Council of the Association.

The first paper that was presented, that by Prof. S. P. Sadtler, contained some reference to the conditions which led up to the inauguration, or founding, of the Council on Pharmacy and Chemistry by the Trustees of the American Medical Association and also outlined in a general way the methods that had been pursued and the objects that were sought to be attained (p. 22).

In speaking of "The Endorsement of the Council on Pharmacy and Chemistry by Medical Men," Dr. Alfred Stengel pointed out that the present work of the Council was largely in the nature of a compromise with manufacturers, and would, no doubt, lead up to more satisfactory conditions in the future. Dr. Stengel also said that the opposition that had existed to the Council was largely due to ignorance or cupidity and was fast giving way to a healthy sentiment of endorsement, as the object and the aims of the Council were becoming more fully understood.

Dr. Stengel thought that while physicians had been remiss in allowing themselves to be imposed on by detail men, pharmacists had also been remiss in not keeping physicians informed of the misleading statements that were being made in connection with these supposedly new remedies. He pointed out the danger of including advertising material of other, at times dangerously potent, preparations with articles designed for popular consumption, and related an experience that he had had with a patient who had a well-developed idiosyncrasy for chloral. Dr. Stengel also made a strong plea for the adoption of short, easily remembered, or catchy names for official or semi-official articles, and expressed the belief that this was one of the strongest reasons for the popularity of nostrums.

Professor LaWall, in speaking of "The Effect of Publicity on the Standing and the Use of Nostrums," referred to the exposures of the composition of so-called ethical proprietary preparations that had been made by the *Journal of the American Medical Association* and also called attention to the work that had been done in connection with popular nostrums by Mr. Samuel Hopkins Adams, in *Collier's Weekly*. (See this JOURNAL, p. 29.)

The concluding paper on the program, "The Needs of the Council," was contributed by Prof. W. A. Puckner, the Secretary of the Council on Pharmacy and Chemistry of the American Medical Association, and outlines how and why pharmacists should contribute to the work that is now being undertaken by the Council. (See this JOURNAL, December, 1906, p. 584.)

As noted before, quite a number of the members present took part in the general discussion.

Mr. John K. Thum said that a pharmacist should be a scientist and as such should aspire to discover and to disseminate the truth. He should, himself, become thoroughly acquainted with the contents of the U.S.P. and of the N.F. so that he would at all times be prepared to give satisfactory information regarding any one of the articles contained in these books. (See p. 34.)

Mr. Franklin Apple thought that the pharmacist had been remiss in informing medical men of the abuses connected with nostrums largely because of a feeling of fear that physicians would resent such information when offered.

Dr. Clement B. Lowe referred to the large number of proprietary remedies that the retail pharmacist was obliged to carry in stock. Many of these preparations are ultimately exploited directly to the laity.

Prof. Henry Kraemer spoke of the importance of educating medical men to seek the co-operation and the advice of pharmacists in matters relating to medicinal preparations.

Mr. Samuel J. Riegel said that he had had an extensive experience with physicians and had always found them willing to receive information when properly offered.

Mr. Thomas H. Potts said that he had been impressed by the suggestions and thoughts that had been expressed by the members present and called attention to the need of cultivating and maintaining a high degree of self-respect on the part of the pharmacist. He further said that some degree of discernment should be shown as to when and how physicians are accosted.

Mr. Vanderkleed called attention to the very wide field that the Council had essayed to cover and thought that any attempt to judge of the therapeutic action and uses of new remedies, by such a limited body, would lead into difficulties.

Mr. M. I. Wilbert pointed out that the work of the Council was entirely limited to pharmacy, chemistry and pharmacology and that no attempt was being made to recommend articles for their therapeutic uses.

After some additional discussion on the subject-matter before the meeting, the following resolutions were offered, and on motion adopted:—

Resolution Favoring Exhibitions of U.S.P. and N.F. Preparations.—Whereas, It appears to be desirable that physicians be made more fully acquainted with the contents of the Pharmacopœia of the United States, and of the National Formulary, and that they be given some practical demonstration of the resources and the abilities of present-day pharmacists; therefore, be it

Resolved, That the Philadelphia Branch of the American Pharmaceutical Association favors holding a scientific exhibition of U.S.P. and N.F. preparations, in connection with annual or stated meetings of medical societies in its territory; and, be it further

Resolved, That a committee of five members be appointed by the chair to co-operate with the executive committee of this branch in obtaining the permission for and in organizing such exhibitions.

Resolution Endorsing Council on Pharmacy and Chemistry.—WHEREAS, The practice of pharmacy constitutes an important branch of the science of medicine; and,

WHEREAS, Secrecy in any one department or branch of a science must of necessity be a menace to and detract from accurate observation and rational progress in other departments and branches of the same science; and,

WHEREAS, The American Medical Association, in establishing the Council on Pharmacy and Chemistry, has recognized and endorsed this underlying principle of true progress, in the science of medicine, through the department of pharmacy; therefore, be it

Resolved, That we, the members of the Philadelphia Branch of the American Pharmaceutical Association, heartily endorse the objects and the aims of the Council on Pharmacy and Chemistry of the American Medical Association; and, be it further

Resolved, That, individually as well as collectively, we pledge our active support and co-operation to the Council in the work now in hand.

M. I. WILBERT,
Secretary.

The stated meeting of the Philadelphia Branch of the American Pharmaceutical Association, on the evening of December 12, 1906, was devoted to a discussion of the Federal Pure Food and Drugs Law.

The session was presided over by Prof. Joseph P. Remington and was attended by upwards of 250 members and visitors.

"The Food and Drugs Act, June 30, 1906, and its Effect on the Composition of Medicines," by Dr. Harvey W. Wiley, was presented by Dr. Lyman F. Kebler, Chief of the Drug Laboratory of the Bureau of Chemistry, Washington, D. C. (p. 7).

Dr. Wiley, in this paper, refers to the existing laws regulating the traffic in drugs, the standards that have been adopted, and also calls attention to some of the more interesting questions that have arisen in connection with the provisions of this act.

The paper also refers to the fact that, even under the provisions of this new law, the manufacturers of nostrums and the irregular practitioners of medicine, or quacks, are not materially interfered with and that the unspeakable abuses connected with the exploitation of secret remedies will continue practically unchanged. It appears that the best that may be expected from a conscientious enforcement of the Food and Drugs Act is a distinct improvement in the drugs used in the legitimate practice of medicine and a gradual elimination of false and misleading statements from the labels and some of the literature sent out with nostrums.

Mr. Mahlon N. Kline, of Philadelphia, in speaking of the "Practical Experience with the Federal Pure Food and Drugs Law," referred to some of the previous attempts at Federal legislation along the same lines, and incidentally called attention to some of the more irksome and apparently objectionable features of the present law. Despite the various shortcomings of the present act practically every reputable manufacturer and dealer will willingly submit to the extra work and expense involved, feeling that ultimately not alone the public but he himself will be well recompensed by the change.

Mr. Kline called attention to a number of questions that had arisen in connection with the law itself, and with the various provisions enumerated in the rules and regulations that have been adopted. He also cited a number of additional opinions that had been obtained from the Secretary of Agriculture and also from the Chief of the Bureau of Chemistry.

This paper was followed by an animated discussion, consisting mainly of a cross-fire of questions relating to minor details but illustrating that the average pharmacist is taking cognizance of what is going on, and that at least many of them are willing and even anxious to compel manufacturers and wholesale dealers to live up to and to comply with the several provisions of the Pure Food and Drugs Act.

Mr. Caswell A. Mayo, of New York, read a paper entitled "The Retailer and the Drugs Act," in which he called attention to the effect that the law will have on the public and more directly on the business done by retail pharmacists. Many so-called patent medicines will be materially changed in appearance and also in composition, and the pharmacist will no doubt be expected to explain these changes.

A communication from Dr. Wm. Jay Schieffelin, of New York, bearing on some of the more intricate questions involved in the rules and regulations, was read and dicussed. Several additional communications that had been sent in, were, owing to a lack of time, referred to but not read in full.

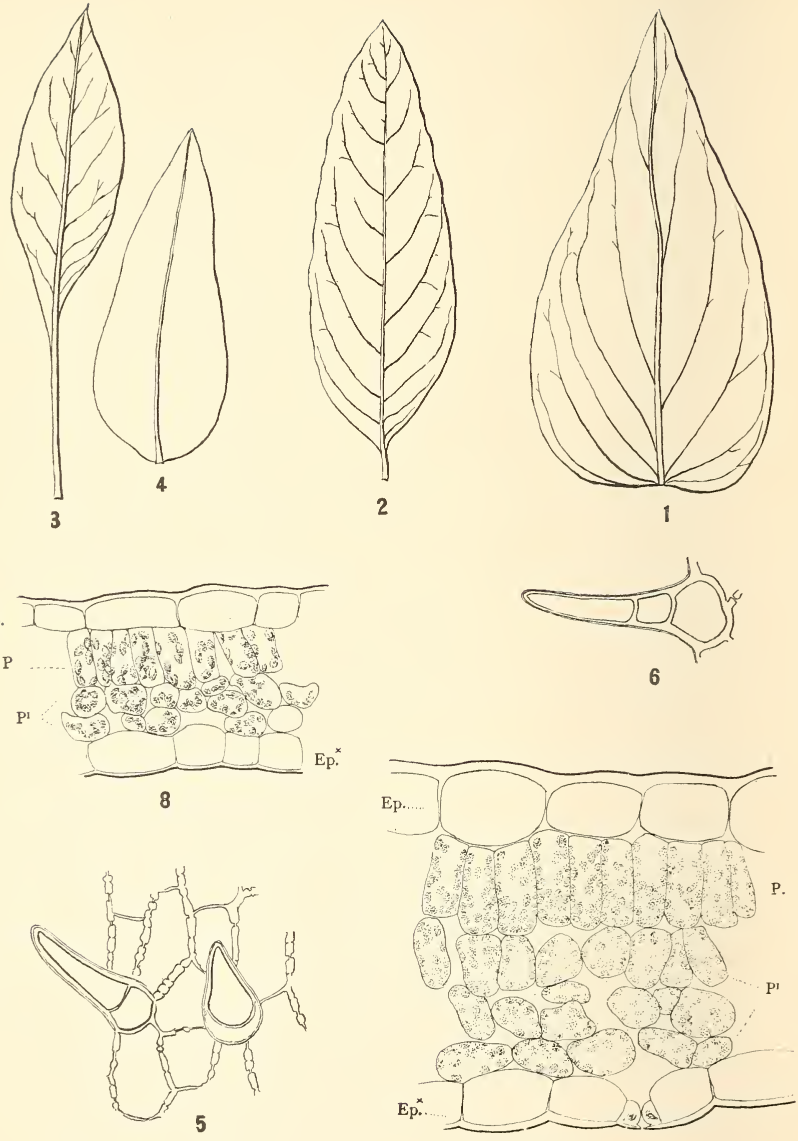
Professor Remington referred to the recent death of Mr. Albert E. Ebert, of Chicago, a prominent member of the American Pharmaceutical Association, and suggested that a committee be appointed to draw up and to present to the Philadelphia Branch a suitable set of resolutions. It was moved and seconded that a committee of three be appointed by the Chair, to draft such resolutions and to solicit and accept contributions toward the monument fund inaugurated by the Chicago Veteran Druggists' Association.

The Chair appointed as members of this committee, Mr. William McIntyre, Mr. Edwin Boring and Mr. J. H. Redsecker.

Mr. Kline suggested that some expression of opinion in regard to the probable enactment of a State law, based on the Federal Pure Food and Drugs Law, might be opportune. After some additional discussion it was adopted as the sense of the meeting that a State drug law, based on the Food and Drugs Act, June 30, 1906, would be desirable. It was further proposed to appoint a committee of three members to confer with similar committees from other associations for the purpose of considering the advisability of such legislation and of bringing it in harmony with the essential provisions of the Federal law. This proposition was, on motion, adopted and the Chair appointed Messrs. Wm. L. Cliffe, Jos. W. England and M. I. Wilbert to serve as a committee from the Philadelphia Branch of the American Pharmaceutical Association, to confer with similar committees from other associations.

The Chair also announced that he had appointed the following members to serve as a committee on exhibitions, in addition to the executive committee of the local branch: Dr. H. C. Wood, Jr.; Mr. Frank E. Morgan, Mr. Henry C. Blair, Prof. Henry Kraemer and Prof. Charles H. LaWall.

M. I. Wilbert,
Secretary.



Auctor ad nat. delin.

PLATE I.

THE AMERICAN
JOURNAL OF PHARMACY

FEBRUARY, 1907.

THE INTERNAL STRUCTURE OF THE STEM AND LEAF OF RUELLIA CILIOSA PURSH., PHLOX OVATA L. AND SPIGELIA MARILANDICA L.

BY THEO. HOLM.

(With two plates.)

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In a previously published paper[1] we have seen that the roots and rhizomes of these plants may be readily distinguished by means of their structure, and especially by the internal. In regard to the vegetative organs above ground, the stem and leaf, these show, also, a very characteristic structure, which is very useful to the separation of these plants, when the determination seems doubtful.

When the flowers are present the plants are easily recognized; in *Spigelia* the flowers are scarlet outside, yellow within, and the clavate tube of the corolla is much longer (about four times) than the lobes; in *Ruellia* the flower is light blue, or very slightly purplish, with a funnelform corolla, while in *Phlox* the corolla is pink and strictly salverform. The outline of the foliage is, also, very distinct, besides the venation. Our *Fig. 1* shows the stem-leaf of *Spigelia; Fig. 2*, that of *Ruellia; Figs. 3* and *4*, a basal and a stem-leaf of *Phlox*. Characteristic of the leaf of *Spigelia* is that most of the lateral nerves proceed from near the base of the blade, while in *Ruellia* the blade is strictly penninerved, and in *Phlox ovata* the lateral nerves are not at all visible in the stem-leaf (*Fig. 4*), and only faintly visible in the basal. The leaves are hairy in all of these plants, but the hairs are very small in *Phlox* and *Spigelia*, and hardly to be detected by the naked eye; in *Ruellia*, on the other hand, the lower face of the leaf is very hairy, the hairs long and very distinct along the veins especially. A full description of these plants is, moreover, to be found in Gray's Manual and in his Synoptical Flora of North America.

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[1] This JOURNAL, Vol. 78, 1906, page 553.

When thus the specimens are complete their identification is very easy; when neither the flowers nor fruits are represented the plants may be identified by means of their leaves and stems, not speaking of the excellent characters furnished by their rhizomes and roots.

A microscopical examination may sometimes be necessary, and in order to facilitate the work we might offer a brief description of the anatomical structure possessed by these plants as an appendix to our paper (l. c.) on their root-structure. Let us first examine the stem.

Ruellia ciliosa Pursh.—In the *Acanthaceæ* the nodes of the stem are usually quite swollen and thicker than the internodes, which is due to a different development of some of the tissues. The internodes are obtusely quadrangular in cross-sections. The cuticle is smooth, and the outer cell walls of epidermis are moderately thickened. Cystolithes are frequent in the epidermis. A collenchymatic tissue of several separate strands is to be observed outside the cortex; this parenchyma, the cortical, is thin-walled and consists of about nine layers with cystolithes and raphides, but without sclerotic cells. A thin-walled endodermis surrounds the stele, which is obtusely quadrangular in transverse section. We find in the stele an almost continuous ring of stereome located between endodermis and the leptome. The mestome-strands are all collateral; the hadrome consists of rather short rays of vessels separated by mostly four rows of thick-walled parenchyma. The central portion of the stele is occupied by a thin-walled pith with many raphides and crystals, but without cystolithes, sclerotic cells and deposits of starch.

In the swollen nodus the collenchyma is developed much stronger, *i. e.*, it constitutes a closed sheath around the cortex; the cells are more thick-walled and there is a larger number of layers. The cortex represents a broader zone in the node than in the internode; furthermore, the stereome inside endodermis is reduced to a few scattered cells. In regard to the pith this is much broader in the node than in the internode.

Phlox ovata L.—The stem is cylindric, glabrous and smooth, and covered by a thick, longitudinally wrinkled cuticle. Epidermis is very thick-walled, especially the outer walls, and does not contain crystals of any kind. The cortex consists of about ten layers, of which the peripheral, the one that borders on epidermis, is thickened like collenchyma. Endodermis is thin-walled and surrounds a closed sheath of thick-walled stereome in one or two layers. The mestome-bundles are collateral, and the vessels are arranged in long rows with thick-walled medullary rays. The pith is thin-walled, solid and contains no starch.

Spigelia Marilandica L.—In this plant the stem is four-winged, and the wings quite scabrous from short, pointed hairs. The cuticle is wrinkled longitudinally, and epidermis very thick-walled. A collenchyma of several layers is to be observed in the wings, but of only one layer between these, and completely encircling the cortex; the latter consists of about four layers with chlorophyll and starch. The stele is here supported by a few strata of heavily thickened stereome in an almost uninterrupted zone. Very characteristic are the bicollateral mestome strands, in which the leptome is distributed on the outer and inner face of the hadromatic rays. The vessels are narrow, about ten in each row, and the medullary rays consist only of one layer between each two of the hadromatic rays.

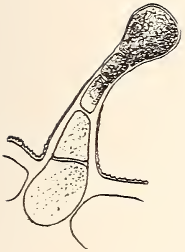
If we compare now the stem-structure of our three plants, it seems as if this may be sufficient to the distinguishing of *Spigelia* from both *Phlox* and *Ruellia*. The four-winged stem and the bicollateral mestome-strands are characters that are possessed by *Spigelia* in contrast to the quadrangular stem of *Ruellia* with cystolithes, and the cylindric stem of *Phlox* destitute of crystals and with simply collateral mestome-bundles. That the stem-leaves of these same plants offer equally distinct peculiarities may be seen from the following notes:

Ruellia ciliosa Pursh.—On the leaf-blade the cuticle is thin and smooth; epidermis is slightly thickened (the outer wall) and viewed "en face" (*Fig. 10*) the lateral cell-walls show prominent undulations, and on both faces. Stomata occur only on the lower face, and they have one pair of subsidiary cells which are vertical on the stoma (*Fig. 10*). Large cystolithes abound in epidermis on both faces, and two kinds of hairs were observed: small, almost sessile glandular (*Fig. 11*), which are scattered over both faces of the leaf, and some long, pluricellular, pointed, which are very frequent along the nerves, especially on the lower face. The chlorenchyma is differentiated into a palisade-tissue (*P* in *Fig. 8*) and a pneumatic, more open tissue underneath this (P^1 in the same figure). The chlorenchyma is interrupted by collenchyma and by a thin-walled water-storage tissue, which follows the stronger veins and which is especially well developed on the dorsal face of the blade. The mestome-strands are collateral, and the mediane, which is the thickest, is composed of several strands united so as to form a broad arch with the concave face turned upwards. While the lateral nerves possess distinct and completely closed parenchyma-sheaths, the midrib shows merely an open sheath covering the leptome side of the mestome strands, but not the hadrome.

Phlox ovata L.—The thick cuticle is smooth on the lower, but wrinkled on the upper surface of the leaf, showing striations in all directions around the stomata; where it covers the hairs (*Fig. 13*) it shows very distinct spiral ridges. The stomata, which are confined to the dorsal face of the blade, have no subsidiary cells, but are surrounded by mostly three ordinary epidermis cells. The outer cell-wall of epidermis is very thick, especially on the lower face. Small wart-like projections of epidermis (*Fig. 14*) abound along the margins of the leaf, but besides these there are also some short, pluricellular hairs (*Fig. 13*) scattered over both faces and along the margins, but they are very minute; glandular hairs (*Fig. 15*) consisting of a unicellular, globose head borne on a short stalk of three to four cells in a single row, occur above the broad midvein, but they do not seem to be very numerous.

In regard to the chlorenchyma we find, also, here a distinct bifacial structure, there being two layers of typical palisades and about five strata of very irregular cells with wide intercellular spaces representing a pneumatic tissue. The leaf has no stereome, but a few strata of collenchyma accompany the midrib, which is, moreover, surrounded by several broad layers of thin-walled water-storage tissue. The midvein shows the same outline as in *Ruellia*, but has a closed parenchymatic sheath all around; the lateral veins are very thin and are directly embedded in the chlorenchyma.

Spigelia Marilandica L.—The leaf is much thicker than in the two other plants, and the veins much more prominent on the dorsal face. The cuticle shows striations, but these are not so distinct as in *Phlox ovata*. Epidermis is moderately thickwalled and bears



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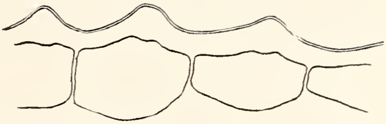

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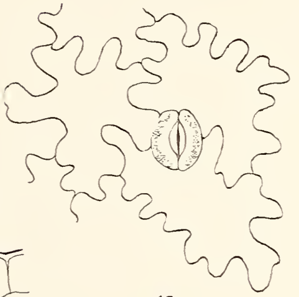

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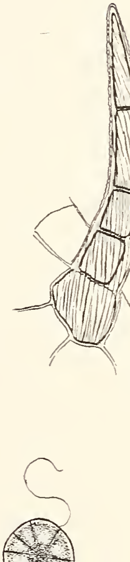

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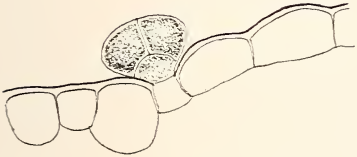

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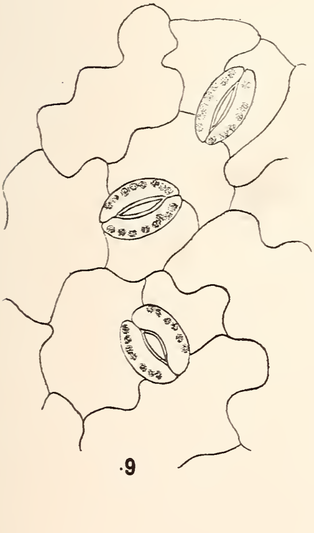

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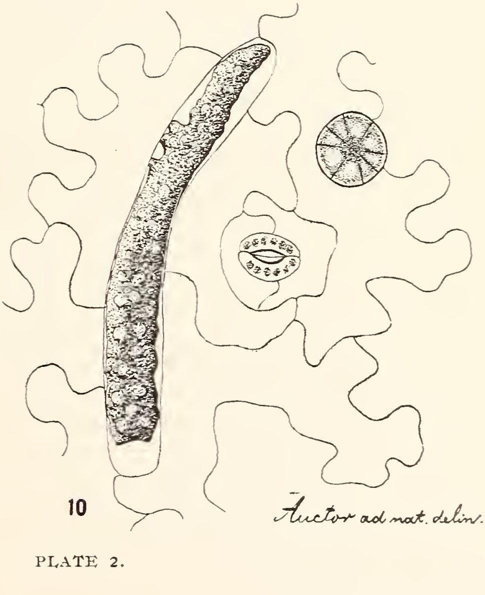

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Auctor ad nat. delin.

PLATE 2.

many short hairs (*Figs. 5* and *6*) along the margins and along the veins, on the dorsal face especially. Viewed "en face" the lateral cell-walls of epidermis are undulate on both sides of the leaf, but the undulations are not so pronounced as in *Ruellia* and *Phlox* subsidiary where epidermis covers the midvein the lateral walls are very thick and porous (*Fig. 5*). The stomata (*Fig. 9*) occur only on the lower face; they have no subsidiary cells, and are mostly surrounded by three ordinary epidermis-cells.

The chlorenchyma (*Fig. 7*) shows one stratum of typical palisades (*P*) and an open pneumatic tissue of three layers. Above and below the stronger lateral ribs and the mediane are strata of hypodermal collenchyma and of thin-walled water-storage tissue, which reaches its highest development in the midrib, and on the dorsal face of this. The mestome-strands are collateral and quite broad; they all possess closed parenchyma-sheaths. While no crystals were observable in *Phlox*, we find in the leaf of *Spigelia* small needle-shaped crystals of calcium oxalate in the colorless parenchyma that surrounds the veins.

Considered by themselves the leaves of our plants do possess a very distinct structure, by which they may be readily distinguished. Although they are bifacial in regard to the distribution of stomata as well as to the differentiation of the chlorenchyma, some characteristics may be pointed out so as to separate them from each other. For instance, the occurrence again of cystolithes in *Ruellia*, and the small glandular hairs observed in this genus (*Fig. 11*); furthermore, the presence of subsidiary cells in *Ruellia*, and their absence from the two other plants. The total lack of crystals in *Phlox* in contrast to *Ruellia* and *Spigelia;* furthermore, the cuticular striations are very characteristic of the species of *Phlox*. Glandular hairs like those observed in *Ruellia* and *Phlox* seem to be absent from *Spigelia*, while the short, more or less obtuse hairs (*Figs. 5* and *6*) are characteristic of this genus.

We might condense the anatomical characterization still farther, and state that *Spigelia Marilandica* L. has a four-winged stem and bicollateral mestome-strands, characters that are not to be found in either *Ruellia* or *Phlox*.

BROOKLAND, D. C., October, 1906.

EXPLANATION OF PLATES.

PLATE I.

Fig. 1. Stem leaf of *Spigelia Marilandica.*
Fig. 2. Stem leaf of *Ruellia ciliosa.*
Fig. 3. Basal leaf of Phlox ovata.
Fig. 4. Stem leaf of same.
Fig. 5. *Spigelia Marilandica ;* epidermis of leaf from below the midrib.
Fig. 6. Same species; hair of leaf from below the midrib.
Fig. 7. Same species; transverse section of leaf. Ep. = epidermis of upper, Ep.^{x} = epidermis of lower face; P = palisade-tissue; P^{1} = pneumatic tissue.
Fig. 8. *Ruellia ciliosa ;* transverse section of leaf; letters as above.

PLATE 2.

Fig. 9. *Spigelia Marilandica ;* epidermis from lower face of leaf, showing the stomata.
Fig. 10. *Ruellia ciliosa ;* epidermis from lower face of leaf, showing a cystolithe, a glandular hair and a stoma.
Fig. 11. Same species; cross-section of leaf, showing epidermis with a glandular hair.
Fig. 12. *Phlox ovata ;* epidermis from lower face of leaf.
Fig. 13. Same species; a hair from margin of leaf.
Fig. 14. Same species; transverse section of leaf, showing the thick-walled epidermis along the margin.
Fig. 15. Same species; a glandular hair from above the midrib.

THE ANATOMICAL METHOD.

BY THEO. HOLM.

The object of the anatomical method is to apply such microscopic-anatomical and micro-chemical characters, observable in the organs of animals and plants, to the systematic distinction of these. When we remember the enormous number of species that are known at present, and the steady increase of new ones, it does not seem strange that naturalists have felt, and long ago, the necessity of augmenting the modes of distinguishing the species. The systematic method, which confines itself to merely external morphological characters, was quite sufficient and satisfactory in earlier days, when only a limited number of species were known, and so long as the systematists did not look beyond the distinction externally of their species. But in recent years systematists have to deal with a much larger number of species, and are no longer satisfied with a mere superficial knowledge of these. Something more is desired, and one of the great results gained by the use of the microscope is the discovery of internal characters of value to the distinction of species. Thus when our study and comparison of the external characters may fall short, valuable assistance may sometimes be rendered through a microscopical examination.

In botany the anatomical method has been in use for very near a century; however, it is only recently that the anatomical investigation has become methodically applied in the service of systematic botany. This one chapter of plant-anatomy thus plays an important role by being of practical use; however, it represents besides at the same time a prominent place in scientific botany by enlarging our knowledge of plant-structures.

The anatomical method, so far as concerns the identification of plants, is, of course, not a new one. In pharmacy, in phyto-paleontology and especially in cryptogamic botany, the anatomical method has been applied for many years. But in systematic botany, as stated above, as a means of distinguishing the higher plants, the methodical application of anatomical characters is somewhat modern.

The history of botany tells us about the earliest suggestions as to its possible application, and the earliest attempts to discover and appreciate the internal structures. Linnæus spoke of "formæ et structuræ"; De Candolle and Endlicher separated the *Monocotyledones* from the *Dicotyledones* by means of their structural divergences; Martius knew of the peculiar structure of the wood in Conifers; Mirbel, as early as 1810, wrote an anatomical monograph of the *Labiatæ*, followed soon by Chatin, Regnault, Duval-Jouve, and others. The methodical application of anatomical characters in higher plants is, on the other hand, more recent, the impulse being given by Radlkofer and Vesque, who demonstrated in a most clear and concise way that anatomical characters are not only very useful, but in a number of cases absolutely necessary for scientific classification of plants. From that time the botanical literature shows us the enormous results gained in later years through the use of the microscope: the broadened field in systematic botany and the rapid increase in the recording of anatomical distinctions of genera, of species, and even of families.

The anatomical method has also gained universal recognition in works on pharmacology. How would it be possible to ascertain the true nature of dried or pulverized drugs unless by means of a microscopical examination? Broken rhizomes, roots or stems, as they often appear in the shape of drugs, often resemble superficially each other to such an extent that it seems impossible or at least extremely difficult to decide whether such specimens are roots or stems, or even leaves. This first step, however, is only elementary, and requires but little botanical knowledge; a microscopical examination soon shows us what they are, stems, roots or leaves. The difficulty comes in, when the question is to decide whether some given specimens really belong to a certain species, or whether they are something else and of lesser or no value. To settle such questions involves more than an ordinary botanical knowledge, and it is here that the anatomical method comes in as the most reliable guide, in the shape of a microscopic-anatomical or micro-chemical analysis.

But, plant-structures are manifold; in some genera the leaves are the only organs that possess structures sufficiently characteristic for the anatomical determination of the genus or species; in others, both the stems and roots may be necessary. Some certain plant-families are, on the other hand, so thoroughly characteristic in their structures that either the stems or the leaf may suffice for the identification. To utilize such anatomical characters requires, however, a large amount of literary research, and the literature on this subject is indeed very scattered. An important publication has, meanwhile, been offered by Dr. Solereder, who has gathered the most essential points known, so far, from anatomical botany; we find in his work: "Systematische Anatomie der Dicotyledonen" a most complete representation of the various structures possessed by these plants, arranged systematically, described methodically. From this important work the student who is familiar with plant-anatomy can gather much information, so as to be able to identify a number of plants anatomically.

Let us now present some few examples of the application of this method in order to demonstrate the importance of anatomical characters. The family *Ranunculaceæ* is so well known to students of pharmacology, since several of the genera occupy quite a prominent place among the officinal plants, and several are known for their poisonous properties.

A cross-section of the rhizome, of the stem above ground, and of the petiole shows in this family a certain structure of the mestome-strands, which otherwise is almost exclusively known from the

Monocotyledones. The vessels and the other elements of the hadrome are here arranged in the shape of the letter V, with the point toward the pith, and with the arms partly enclosing the leptome. *Pæonia,* however, makes an exception, since the mestome-bundles show in this genus the ordinary structure with the hadrome flattened where it borders on the leptome, and not surrounding this. In several of the herbaceous and woody species of this family a more or less continuous zone of stereome surrounds the mestome-strands, thus separating these from the cortical parenchyma.

If we examine the leaves we notice that the stomata lack subsidiary cells, and that they are surrounded by several ordinary epidermis-cells; furthermore that the palisade-tissue in some certain species shows the remarkable structure of "arm-palisades," first described by Haberlandt. *Aconitum Napellus* and *dissectum,* but not *A. uncinatum* show this structure, likewise *Caltha, Trollius,* several species of *Anemone, Clematis* and *Pæonia.*

The hairs show a very simple structure in this family, being mostly unicellular, even when developed as glandular hairs. Internal glands are not known from the family, but in *Eranthis* and *Helleborus* the parenchyma of the rhizomes and roots does contain an oily matter; besides that, the stems and roots of *Coptis, Hydrastis, Xanthorhiza* and certain species of *Thalictrum* contain yellow berberine.

One of the most interesting and striking characters is, however, to be found in the stem of certain herbaceous genera, as, for instance, *Actæa, Cimicifuga* and *Thalictrum.* In these the mestome-bundles are not located in one circular band and are not surrounded by a pericycle or an endodermis so as to represent a central cylinder, a stele, as in other Dicotyledones with normal structure. But we find in these genera two or more irregular bands of mestome-bundles, with no arrangement so as to constitute a stele. In other words, we meet with an astelic axis, a term proposed by Van Tieghem, and such structure is very rare among the *Dicotyledones.*

There are thus several characters by which this family may be distinguished, even if it does share some of these with genera of other families. For instance, the V-shaped outline of the hadrome, which recurs in some of the *Fumariaceæ, Plumbagineæ* and *Compositæ.* Also the unicellular glandular hairs are known from other families: *Malvaceæ, Tiliaceæ, Rutaceæ,* etc. The peculiar shape of the palisade-cells so very characteristic of *Filices, Equisetaceæ, Coni-*

feræ and *Gramineæ* occur also within the *Ranunculaceæ*, furthermore in some genera of *Araliaceæ*, *Caprifoliaceæ*, *Solanaceæ*, etc.

It is thus very difficult, if possible, to point out such characters as may be possessed by a certain family alone. However, if we examine the anatomical diagnoses of the various families, in which some of these peculiarities are to be found besides in the *Ranunculaceæ*, we then notice that only one or two of these may occur at the same time and accompanied by other characters not known from this family.

A family that has very many anatomical characters in common with others is that of the *Compositæ*. In this family we notice the superficial development of cork; the prismatic or needle-shaped crystals of calcium oxalate; the resiniferous and the articulated lacticiferous ducts; the numerous types of hairs, and, finally, the occurrence of mestome-strands in the pith, of leptome alone or with hadrome. By some of these characters the family may be distinguished, in spite of the fact that none of these are especially peculiar to the family. It is the structure in general of the *Compositæ* that makes them so very distinct among the other plants.

When compared, for instance, with the closely allied *Campanulaceæ*, the *Compositæ* show themselves remarkably distinct, even if the principal features be identical to both. In the *Campanulaceæ* we meet with the same distribution of the mestrome-strands in the pith, with or without hadrome; we notice the occurrence ot articulated laticiferous ducts, the presence of inulin, etc. But the *Campanulaceæ* lack crystals of calcium oxalate and resiniferous ducts; they possess, on the other hand, sphærocrystals and the very peculiar cystolithic hairs.

The application of the anatomical method means a continued comparison and a study of plant-structures; it has proved to be very useful, however; besides that, it teaches us so very much about the organization of the plants, illustrated by the structures and functions of the various tissues.

BROOKLAND, D. C., December, 1906.

A GOOD METHOD MADE WORTHLESS BY UNWARRANTED MODIFICATIONS.

By H. M. Gordin.

The method adopted by the U.S.P. 1900 for the estimation of strychnine in nux vomica has been pronounced unreliable by many chemists who have given the method a fair trial. A review of the work of several analysts on the verification of the method is given in the January number of this Journal by Webster and Pursel, who find that when the directions of the U.S.P. are followed and a nitric acid having the specific gravity 1·40 is used in the method the results are perfectly erratic, while if an acid is used having the specific gravity 1·42 the results obtained are very good. Under the generally prevailing impression that the U.S.P. method is identical with the one published by me in 1902 (see *Proc. Am. Ph. A.*, 1902, 336, and *Arch. Pharm.*, 1902, 641) the chemists, in criticizing the method, frequently refer to it as Gordin's method. I am therefore compelled to emphasize the fact that the directions in the U.S.P. method are different from those I gave in my original paper, and that the Committee of Revision has without any good reason and moreover, *in spite of my vigorous protest*, modified my method in such a way as to ruin it completely. On looking up my method as given in the above named references it will be seen that I direct to use a nitric acid having the specific gravity 1·42 and to add a little amyl alcohol at the end of the evaporation of the alkaloidal solution in order to avoid loss through spurting. The Committee left the amyl alcohol out entirely and changed the strength of the nitric acid from 1·42 to 1·40. As according to Lunge and Rey these two specific gravities correspond respectively to 69·8 and 65·3 per cent. of absolute HNO_3, the stronger acid cannot be replaced by the weaker without destroying the whole value of the method.

While in changing my method the Committee was undoubtedly animated by a praiseworthy desire to make it simpler, it ought to be clear to the members of the Committee by this time that for the credit of the authority of the U.S.P. it is absolutely imperative that the strychnine assay should be without delay replaced by the one I have given in my paper. As an acid of the specific gravity 1·42 can be obtained from any wholesale house and the simple addition of a few drops amyl alcohol effectively prevents possible loss of strychnine, there can be no reason why the method should not be given exactly as I have worked it out. In our school the method has been used by dozens of students with excellent results, but our students instead of using the U.S.P. method work according to directions copied by the instructors from my original article.

NORTHWESTERN UNIVERSITY SCHOOL OF PHARMACY.

NOTES ON SOME PLANTS WHICH IN DRYING STAIN PAPER.[1]

By J. H. MAIDEN, Government Botanist and Director of the Botanic Gardens, Sydney.

Everyone with herbarium experience must have made the observation that some plants stain the papers to which they are attached. Some, indeed, stain so persistently (e.g. *Drosera Whittakeri*) that the coloring matter will penetrate a dozen sheets or more. I have not observed that any botanist has drawn special attention to the matter and do not know that any one has given an explanation of these phenomena. I say phenomena, because the coloring or rather staining may arise from various causes, *e.g.* the presence of a specific coloring matter in the root or other portion of the plant, or the formation of a coloring matter by oxidization or other chemical change. The subject is of course one for a chemist, who will subject the paper itself to examination.

It will be observed that the plants, in many cases, leave sharp photographic impressions on the paper. The phenomena arise from an emanation,—a dry distillation possibly. It is proper to point out that herbarium specimens in the National Herbarium, Sydney, are protected from insect ravages by means of naphthaline. No bichloride of mercury is used, but most plants are placed in a bisulphide of carbon chamber before they are placed in the herbarium boxes.

Most of the stains appear to be purplish, of varying intensity; the remainder are mostly greys and browns. The drying black of plants which do not stain is a cognate matter which must not be confused with the subject of staining. Many saprophytes and root parasites dry black, e.g. *Monotropa* (Monotropaceæ), *Gerardia* (Scrophulariaceæ), *Comandra* (Santalaceæ). Some *Veronicas*, apparently not root-parasitic, dry black, as also do some *Utricularias*. In *Zygophyllum* there is some stain, but this apparently emanates from the juice only of the succulent plant, and this belongs to a different class of phenomena.

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[1] Read before the Royal Society of N. S. Wales, June 6, 1906, and reprinted from *Journal and Proceedings of the Royal Society of N. S. W.*, Vol. XL, pp. 39–45.

I submit to you a list of a few plants (arranged in natural orders alphabetically) which I have observed as having stained paper in my own herbarium. The list is too small for me to deduce much as regards botanical relationships; it may be added to as search in this and other large herbaria will undoubtedly bring forth many additional instances.

BIXCAEÆ.

Scolopia Gerrardi, Harv. (South Africa).
Oncoba spinosa, Forsk. (Arabia).
Azara microphylla, Hook. (Chili).

These plants, from widely different countries, produce a greenish-grey, greasy looking stain, the *Scolopia* and the *Azara* very abundantly, the *Oncoba* to a less extent.

BORAGINACEÆ.

Alkanna tinctoria, Tausch.

The root produces a purple stain, the well-known alkanet.

COMPOSITÆ.

Helichrysum baccharoides, F.v.M., Australia.

The whole plant produces a red to purple blush.

CONVOLVULACÆ.

Ipomœa heterophylla, R.Br.

The young leafy tips of this Australian plant produce a reddish-brown stain.

DROSERACEÆ.

The first reference to the staining power of Australian *Droseras* I can find is as follows[1]:—"These Droseracous plants appear likely to be in some cases of commercial value as dyers' plants. Every part of *D. gigantea* stains paper of a brilliant deep purple; and when fragments are treated with ammonia they yield a clear yellow. The bulbs of *D. erythrorrhiza* and *stolonifera* possess the same property; in these there is a deep scarlet powder secreted by the scales of the bulbs, which is instantly dissolved in ammonia, forming at first an orange-colored fluid of great richness, but it soon changes to the rich purple above mentioned."

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[1] Appendix to Edwards' *Botanical Register*:—"A sketch of the vegetation of the Swan River Colony," by John Lindley, XXI (1889).

Hooker[1] largely follows Lindley in some remarks on *D. stolonifera*, Endl. Later on, Bentham[2] remarks, "Nearly all the species of this section (Ergaleium) dye the paper in which they are preserved a rich carmine or purple color."

It remained, however, for Prof. E. H. Rennie of Adelaide to examine the coloring matter of this genus. He first extracted two beautiful red coloring matters from the corms,[3] and subsequently submitted these coloring matters to an exhaustive examination.[4]

GENTIANACEÆ.

Gentiana saxosa, Forst., from the Australian Alps, gives a yellowish-brown, but not strong strain.

LOGANIACEÆ.

Logania linifolia, Schlecht. A specimen from the Mallee district, Victoria, stains paper very strongly purplish; the stain actually goes through the paper.

L. ovata, R. Br. and *L. longifolia*, R. Br., also Australian plants, likewise exhibit marked stains.

Strychnos psilosperma, F. v. M., N. S. Wales and Queensland, affords a purplish stain, not so intense as *Logania*.

OLEACEÆ.

Jasminum simplicifolium, Forst. Specimens from New South Wales and Lord Howe Island exhibit a greasy-looking grey stain.

MYRTACEÆ.

Some species of *Eucalyptus* exhibit a greyish stain, which does not appear to be an oil stain. Instances are *E. virgata*, Sieb., and its variety *obtusiflora*; also *E. Luehmanniana*, F.v.M.

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[1] *Icones Plantarum*, Vol. IV, tab. 389 (1841).

[2] *Flora Australiensis*, II, 462.

[3] *Journ. Chem. Soc.*, April, 1887.

[4] "The coloring matter of *Drosera Whittakeri*," *Journ. Chem. Soc.*, LXIII, 1083 (1893).

POLYGALACEÆ.

Comesperma retusum, Labill., *C. sylvestre*, Lindl., and *C. ericinum*, DC., stain the paper purplish. This tends to confirm the close affinity between these three Eastern Australian species, already ascertained on morphological grounds.

The stain is also seen in *C. flavum*, DC., and *C. calymega*, Labill., two Western Australian species. The stain is of considerable persistence, it being well marked in Dr. Leichhardt's specimens collected in 1843.

The stain is most marked in *C. retusum* so far as my specimens go. I have also observed that in some specimens (e.g., *C. ericinum*) the purplish stain is succeeded by a dull brown one. This opens the enquiry as to how long the purple stain persists as such and when it changes color in the cases in which it appears to change with age.

RANUNCULACEÆ.

Clematis pubescens, Huegel, a Western Australian species, affords a purplish-brown stain which I notice in no other species.

RHAMNACEÆ.

Alphitonia excelsa, Reissek. A well marked brown stain is observable in specimens from the Kurrajong, N.S.Wales. I do not notice it in specimens from other localities. This may be connected with the coloring matter surrounding the seeds, but the pigment which has made such a marked photographic representation of the included plant must be somewhat volatile.

SAMYDACEÆ.

Homalium rufescens, Benth., a Natal plant, exhibits a grey, not abundant, stain.

SANTALACEÆ.

Fusanus persicarius, R. Br., and *F. acuminatus*, DC. (Quandong) both Australian plants, show a profuse brown stain. *Fusanus* is, according to some botanists, congeneric with *Santalum*. I do not notice the stains in any species of *Santalum* (as recognized by Bentham).

SCROPHULARIACEÆ.

The *Veronicas* are very interesting in this connection, affording a dark purplish stain. This is seen in Australian species including *V. formosa*, R. Br., *V. nivea*, Lindl., *V. arenaria*, Cunn. Amongst New Zealand species we have *V. vernicosa*, Hook. f., *V. loganioides*, Armstrong, *V. Lyalli*, Hook. f., and *V. Traversi*, Hook. f. In European species I have noticed it in *V. fruticulosa*, Linn. (very abundant); *V. alpina*, Linn.; *V. serpyllifolia*, Linn. (England); *V. saxatilis*, Jacq. (Switzerland).

VERBENACEÆ.

Lippia nodiflora, Linn. I notice a stain in one specimen from Byron Bay, N. S. Wales, but not in specimens from other parts of the world.

* * * *

I have taken no cognizance of Cryptogams, but Mr. Richard Helms, a member of our Society, has obligingly exhibited some species of *Hymenophyllum*, and has furnished the following notes on them:—"There are three species of New Zealand ferns known to me which stain the drying paper. These are *Hymenophyllum polyanthos*, *H. villosum* and *H. bivalve*.

"There is no difficulty with ordinary care to dry the filmy ferns in their natural colors, and each of these mentioned are no exception. *H. polyanthos* sometimes develops fronds to seven inches (without the stalk) which are of a dense dark green, and show the venation indistinctly, making when first dried exceptionally handsome specimens. Soon after getting perfectly dry this fern develops a peculiar, rather strong odor, of which I do not know anything similar. It is however not unpleasant, although neither exactly pleasant. The strength of this odor increases for a considerable time and then it gradually diminishes, yet lasting for many years. My specimens collected upwards of twenty years ago still retain it slightly. If ever so carefully kept in a perfectly dry state and excluded from moisture variations in the atmosphere, this fern will become discolored in often less than a month after first being dried, getting soon quite brown. At this time it begins to stain the paper. The stain like the frond brown is undoubtedly of an oily nature, and soon will penetrate a sheet of tissue paper, leaving on both sides of it a perfect impression, which may gradually penetrate a number of layers of even thicker paper.

"*H. villosum* is a mountain species occurring from 2,500 to 5,000 feet. It is in my opinion purely a very characteristic variety of *H. polyanthos*. It is not of the dark even green colors as this fern, but when first dried rather faintly streaky and showing the venation distinctly. Its fronds are generally not over 2½ to 3 inches long, excluding the fine stalk which varies in length according to situation. It discolors in a similar manner as *H. polyanthos* and stains the paper likewise with an oily impression. The peculiar odor is however not so strong as with *H. polyanthos*. Distinct differences may be observed in these two ferns, but the peculiar odor as well as the oily exudation common to both characterizes them as mere varieties of the same species.

"*H. bivalve* can also not be kept green for many months after preparation. It dries a peculiar delicate green with a faint milky hue and discolors to a pale brown in a few months. It does not develop any peculiar odor after being dried, and does not always stain the paper and generally only faintly when it does. The stain however looks oily."

NEW AND NON-OFFICIAL REMEDIES.[1]

The following articles have been tentatively approved by the Council on Pharmacy and Chemistry of the American Medical Association. The list will be revised by adding other articles as accepted and by omitting any which on further investigation may be found to conflict with the rules of the Council.

Following the name of each article is the name of the manufacturer or, in case of foreign products, of the American agent; where no name is given the article is believed to be protected by neither patent nor trademark. The date following the article refers to the preliminary publication in *The Journal of the American Medical Association*. When no date is given the description has not yet been published. This list, brought up to date, will appear in the first issue of *The Journal of the American Medical Association* of each month.

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[1] From *The Journal of the American Medical Association.*

Acetozone (P. D. & Co.), Sept. 15, 1906.
Acetozone Inhalant (P. D. & Co.), Sept. 15, 1906.
Acet-theocinsodium (Cont. Color and Chem. Co.), Sept. 15, 1906.
Adnephrin Emollient (Stearns & Co.), Sept. 15, 1906.
Adnephrin Oil Spray (Stearns & Co.), Sept. 15, 1906.
Adnephrin Solution (Stearns & Co.), Sept. 15, 1906.
Adnephrin Suppositories (Stearns & Co.).
Adrenalin (P. D. & Co.), Sept. 15, 1906.
Adrenalin Chloride Solution (P. D. & Co.), Sept. 15, 1906.
Adrenalin Suppositories (P. D. & Co.), Sept. 15, 1906.
Agurin (Cont. Color and Chem. Co.), Sept. 15, 1906.
Airol (Hoffman-LaRoche Chem. Works), Sept. 15, 1906.
Albargin (Koechl & Co.).
Alpha-Eucaine Hydrochloride (Schering & G.), Sept. 15, 1906.
Alphozone (Stearns & Co.), Sept. 15, 1906.
Alphozone Tablets (Stearns & Co.), Sept. 15, 1906.
Alumnol (Koechl & Co.), Sept. 15, 1906.
Alypin (Cont. Color and Chem. Co.).
Aminoform (Bischoff & Co.), Sept. 15, 1906.
Anesthesin (Koechl & Co.), Sept. 15, 1906.
Anthrasol (Knoll & Co.).
Antipyrine Salicylate, Sept. 15, 1906.
Antithermoline (G. W. Carnrick & Co.), Sept. 15, 1906.
Antithyroidin (Merck & Co.), Sept. 15, 1906.
Antithyroid Preparations, Sept. 15, 1906.
Argentamin (Schering & G.), Sept. 15, 1906.
Argonin (Koechl & Co.), Sept. 15, 1906.
Argyrol (Barnes & Hille), Sept. 15, 1906.
Aristochin (Cont. Color and Chem. Co.), Sept. 22, 1906.
Aristol (Cont. Color and Chem. Co.), Sept. 22, 1906.
Aspirin (Cont. Color and Chem. Co.), Sept. 22, 1906.
Benzosol (Koechl & Co.), Sept. 22, 1906.
Beta-Eucaine Hydrochloride (Schering & G.), Sept. 22, 1906.
Beta-Naphthol Benzoate (Merck & Co.), Sept. 22, 1906.
Betol (Heyden Chem. Works), Sept. 22, 1906.
Bismal (Merck & Co.), Sept. 22, 1906.
Borochloretone (P. D. & Co.), Sept. 22, 1906.
Brometone (P. D. & Co.), Sept. 22, 1906.
Bromipin—10 per cent. (Merck & Co.), Sept. 29, 1906.

Bromipin—33⅓ per cent. (Merck & Co.), Sept. 29, 1906.
Butyl-Chloralhydrate, Sept. 29, 1906.
Calcium Ichthyol (Merck & Co.), Sept. 29, 1906.
Calomelol (Heyden Chem. Works), Sept. 29, 1906.
Calomelol Ointment (Heyden Chem. Works), Sept. 29, 1906.
Cascara Evacuant (P. D. & Co.), Sept. 29, 1906.
Cascara Tonic Laxative Globules (P. D. & Co.), Sept. 29, 1906.
Chinaphenin (Cont. Color and Chem. Co.), Sept. 29, 1906.
Chloralamid (Schering & G.).
Chlorbutanol, Sept. 29, 1906.
Chloretone (P. D. & Co.), Sept. 29, 1906.
Chloretone Inhalant (P. D. & Co.), Sept. 29, 1906.
Citarin (Cont. Color and Chem. Co.), Sept. 29, 1906.
Collargol (Schering & G.).
Collargal Ointment (Schering & G.).
Creosotal (Cont. Color and Chem. Co.), Oct. 6, 1906.
Cresylone (P. D. & Co.),
Cupro-Hemol (Merck & Co.).
Dentalone (P. D. & Co.), Oct. 6, 1906.
Dermatol (Koechl & Co.) Oct. 6, 1906.
Diabetin (Schering & G.), Oct. 6, 1906.
Dionin (Merck & Co.), Oct. 6, 1906.
Diuretin (Merck & Co.), Oct. 6, 1906.
Duotal (Cont. Color and Chem. Co.), Oct. 6, 1906.
Duotonol (Schering & G.), Oct. 6, 1906.
Elixir Eupnein (Schieffelin & Co.), Oct. 6, 1906.
Elixir Saw Palmetto (P. D. & Co.), Oct. 6, 1906.
Empyroform (Schering & G.), Oct. 6, 1906.
Epicarin (Cont. Color and Chem. Co.), Oct. 6, 1906.
Erythol Tetranitrate (Merck & Co.), Oct. 6, 1906.
Ethylenediamine (Schering & G.), Oct. 6, 1906.
Eucaine, Oct. 6, 1906.
Eucaloids (Edward G. Binz), Oct. 6, 1906.
Eucamul (Edward G. Binz), Oct. 13, 1906.
Euformol (P. D. & Co.).
Eugallol (Knoll & Co.), Oct. 13, 1906.
Eumydrin (Cont. Color and Chem. Co.), Oct. 13, 1906.
Euphorin (Fbrk. v. Heyden), Oct. 13, 1906.
Euphthalmin (Schering & G.), Oct. 13, 1906.

Euquinine (Merck & Co.), Oct. 13, 1906.
Euresol (Knoll & Co.), Oct. 13, 1906.
Euresol Soap (Knoll & Co.), Oct. 13, 1906.
Europhen (Cont. Color and Chem. Co.), Oct. 13, 1906.
Exodin (Schering & G.).
Ferrichthyol (Merck & Co.), Oct. 13, 1906.
Ferripyrine (Koechl & Co.), Oct. 13, 1906.
Ferropyrine (Knoll & Co.), Oct. 13, 1906.
Formalin (Schering & G.), Oct. 13, 1906.
Formin (Merck & Co.), Oct. 13, 1906.
Gallogen (Bischoff Co.), Oct. 13, 1906.
Germicidal Soap (P. D. & Co.), Oct. 13, 1906.
Glutol-Schleich (Schering & G.), Oct. 13, 1906.
Glycerin Emollient (P. D. & Co.), Oct. 13, 1906.
Glycerophosphates, Oct. 13, 1906.
Guaiacol-Salol (Merck & Co.), Oct. 13, 1906.
Guaiamar (Mallinckrodt Chem. Works), Oct. 20, 1906.
Guajasanol (Koechl & Co.), Oct. 20, 1906.
Haemoferrum (Stearns & Co.).
Hedonal (Cont. Color and Chem. Co.), Oct. 20, 1906.
Helmitol (Cont. Color and Chem. Co.), Oct. 20, 1906.
Hemicranin (Cont. Color and Chem. Co.), Oct. 20, 1906.
Hemogallol (Merck & Co.), Oct. 20, 1906.
Hemol (Merck & Co.).
Hemoquinine (Schieffelin & Co.), Oct. 20, 1906.
Heroin (Cont. Color and Chem. Co.), Oct. 20, 1906.
Heroin Hydrochloride (Cont. Color and Chem. Co.), Oct. 20, 1906.
Heromal (Schieffelin & Co.), Oct. 20, 1906.
Heroterpine (Schieffelin & Co.), Oct. 20, 1906.
Hetol (Merck & Co.), Oct. 20, 1906.
Hexamethylenamine Methylencitrate, Oct. 27, 1906.
Holocaine Hydrochloride (Koechl & Co.), Oct. 27, 1906.
Hypnal (Koechl & Co.), Oct. 27, 1906.
Ichthalbin (Knoll & Co.), Oct. 27, 1906, Nov. 10, 1906.
Ichthammon (F. Reichelt), Oct. 27, 1906.
Ichthargan (Ichthyol Co.), Oct. 27, 1906.
Ichthermol (Merck & Co.), Oct. 27, 1906.
Ichthoform (Merck & Co.), Oct. 27, 1906.
Ichthyol (Merck & Co.), Oct. 27, 1906.

Ichthyolum Austriacum (G. Heil & Co.), Oct. 27, 1906.

Iodipin—10 per cent. (Merck & Co.), Oct. 27, 1906.

Iodipin—25 per cent. (Merck & Co.), Nov. 3, 1906.

Iodoformogen (Knoll & Co.), Nov. 3, 1906.

Iodothyrine (Cont. Color and Chem. Co.), Nov. 3, 1906.

Iothion (Cont. Color and Chem. Co.), Nov. 3, 1906.

Isoform Powder (Koechl & Co.), Nov. 3, 1906.

Isopral (Cont. Color and Chem. Co.), Nov. 3, 1906.

Kasagra (Stearns & Co.), Nov. 3, 1906.

Kola, Stearns (Stearns & Co.), Nov. 3, 1906.

Kresamine (Schering & G.), Nov. 3, 1906.

Lac Bismo (E. J. Hart & Co.), Nov. 3, 1906.

Lactophenin (Chem. Fbrk. vrm. Goldenberg, Geromont & Co.), Nov. 3, 1906.

Laminoids Ferruginous (Nascent) (Schieffelin & Co.), Nov. 3, 1906.

Lennigallol (Knoll & Co.), Nov. 3, 1906.

Liquor Tritici (P. D. & Co.), Nov. 3, 1906.

Lithium Ichthyol (Merck & Co.), Nov. 3, 1906.

Lycetol (Cont. Color and Chem. Co.), Nov. 3, 1906.

Lysidin (Koechl & Co.), Nov. 3, 1906.

Mercurol (P. D. & Co.), Nov. 3, 1906.

Mesotan (Cont. Color and Chem Co.), Nov. 3, 1906.

Methaform (Stearns & Co.), Nov. 3, 1906.

Migrainin (Koechel & Co.), Nov. 3, 1906.

Neurocaine (Schieffelin & Co.), Nov. 3, 1906.

Neuronidia (Schieffelin & Co.), Nov. 3, 1906.

Novargan (Heyden Chem. Works).

Novocaine (Koechl & Co.), Nov. 10, 1906.

Nutrose (Koechl & Co.), Nov. 3, 1906.

Oil of Eucalyptus, globules (E. G. Binz.).

Organic Iron Preparations.

Orthoform-New (Koechl & Co.), Nov. 10, 1906.

Orthoform-New Hydrochloride (Koechl & Co.), Nov. 10, 1906.

Ovoferrin (Barnes & Hille), Nov. 10, 1906.

Oxaphor (Koechl & Co.), Nov. 10, 1906.

Pegnin (Koechl & Co.), Nov. 17, 1906.

Phenacetin (Cont. Color and Chem. Co.), Nov. 10, 1906.

Phenocoll Hydrochloride (Schering & G.), Nov. 10, 1906.

Phenocoll Salicylate, Nov. 10, 1906.

Piperazine (Cont. Color and Chem. Co., Schering & G.), Nov. 17, 1906.

Pollantin (Fritzsche Brothers), Nov. 17, 1906.

Pollantin Powder (Fritzsche Brothers), Nov. 17, 1906.

Protargol (Cont. Color and Chem. Co.).

Purgatin (Knoll & Co.), Nov. 17, 1906.

Pyramidon (Koechl & Co.), Nov. 17, 1906.

Pyramidon Neutral Camphorate (Koechl & Co.), Nov. 17, 1906.

Pyramidon Acid Camphorate (Koechl & Co.), Nov. 17, 1906.

Pyramidon Salicylate (Koechl & Co.), Nov. 17, 1906.

Quartonol (Schering & G.), Nov. 24, 1906.

Red Bone Marrow (Armour & Co.).

Sajodin (Cont. Color and Chem. Co.).

Sal Ethyl (P. D. & Co.), Nov. 24, 1906.

Saliformin (Merck & Co.), Nov. 24, 1906.

Salit (Heyden Chem. Works), Nov. 24, 1906.

Salophen (Cont. Color and Chem. Co.), Nov. 24, 1906.

Saloquinine (Merck & Co.), Nov. 24, 1906.

Saloquinine Salicylate (Merck & Co.), Nov. 24, 1906.

Santyl (Knoll & Co.).

Sextonol (Schering & G.), Nov. 24, 1906.

Sidonal (Koechl & Co.), Nov. 24, 1906.

Sodium Cacodylate, Nov. 24, 1906.

Sodium Cinnamate, Nov. 24, 1906.

Sodium Ichthyol (Merck & Co.), Dec. 1, 1906.

Stovaine (Walter F. Sykes), Dec. 1, 1906.

Stypticin (Merck & Co.), Dec. 1, 1906.

Styptol (Knoll & Co.), Dec. 1, 1906.

Styracol (Knoll & Co.), Dec. 1, 1906.

Sublamine (Schering & G.), Dec. 8, 1906.

Sulphonal (Cont. Color and Chem. Co.), Dec. 8, 1906.

Suprarenal Alkaloid, Dec. 8, 1906.

Suprarenal Liquid (P. D. & Co.).

Suprarenalin (Armour & Co.).

Suprarenalin Ointment (Armour & Co.),

Suprarenalin Solution (Armour & Co).

Suprarenalin Triturates (Armour & Co.).

Tannalbin (Knoll & Co.), Dec. 15, 1906.

Tannigen (Cont. Color and Chem. Co.), Dec. 8, 1906.

Tannoform (Merck & Co.), Dec. 15, 1906.

Tannopin (Cont. Color and Chem. Co.), Dec. 15, 1906.
Theobromine, Dec. 15, 1906.
Theobromine Sodium Salicylate, Dec. 15, 1906.
Theocin (Cont. Color and Chem. Co.), Dec. 22, 1906.
Theophyllin, Dec. 22, 1906.
Thermodin (Merck & Co.), Dec. 22, 1906.
Thiocol (Hoffmann-LaRoche Chem. Works), Dec. 22, 1906.
Thiosinamine.
Thyreoidectin (P. D. & Co.).
Tonic Hypophosphites (Sharp & Dohme).
Tonols (Schering & G.), Dec. 22, 1906.
Triferrin (Knoll & Co.).
Triferrol (Knoll & Co.).
Trikesol (Schering & G.).
Trional (Cont. Color and Chem. Co.).
Trioxymethylene (Merck & Co.).
Triphenin (Merck & Co.).
Tritipalm (Stearns & Co.).
Tropacocain Hydrochloride (Merck & Co.).
Trypsogen (G. W. Carnick Co.).
Tumenol-Ammonium (Koechl & Co.).
Tumenol (Koechl & Co.).
Tumenol Sulphone (Koechl & Co.).
Tumenol Sulphonic Acid (Koechl & Co.).
Tussol (Koechl & Co.).
Urethane (Merck & Co.).
Uriform (Schieffelin & Co.).
Uritone (P. D. & Co.).
Uropherin (Merck & Co.).
Urotropine (Schering & G.).
Urotropine-New (Schering & G.).
Validol (Bischoff & Co.).
Validol Camphoratum (Bischoff & Co.),
Valyl (Koechl & Co.).
Veronal (Merck & Co.).
Vibutero (Stearns & Co.).
Vinum Extracti Morrhuae (Stearns & Co.).
Vioform (Bischoff & Co.).
Vioform Gauze (Bischoff & Co.).
Xeroform (Heyden Chem. Works).

DRAFT OF A MODEL STATE PURE FOOD AND DRUG LAW.[1]

Suggested by the Chairman of the Committee on Legislation of the National Wholesale Druggists' Association.

AN ACT For preventing the manufacture or sale of adulterated or misbranded foods or drugs.

Be it enacted—

SECTION 1. That it shall be unlawful for any person to manufacture or sell or offer for sale any article of food or drug which is adulterated or misbranded, within the meaning of this Act; and any person who shall violate any of the provisions of this section shall be guilty of a misdemeanor, and for each offence shall, upon conviction thereof, be fined not to exceed dollars or shall be sentenced to one year's imprisonment, or both such fine and imprisonment, in the discretion of the court, and for each subsequent offense and conviction thereof shall be fined not less than dollars or sentenced to one year's imprisonment, or both such fine and imprisonment, in the discretion of the court. *Provided*, That no article shall be deemed misbranded or adulterated within the provisions of this Act when intended for export to any foreign country and prepared or packed according to the specifications or directions of the foreign purchaser when no substance is used in the preparation or packing thereof in conflict with the laws of the foreign country to which said article is intended to be shipped; but if said article shall be in fact sold or offered for sale for domestic use or consumption, then this proviso shall not exempt said article from the operation of any of the other provisions of this Act.

SEC. 2. That the term "drug," as used in this Act, shall include all medicines and preparations recognized in the United States Pharmacopœia or National Formulary for internal or external use, and any substance or mixture of substances intended to be used for the cure, mitigation, or prevention of disease of either man or other animals. The term "food," as used herein, shall include all articles used for food, drink, confectionery, or condiment by man or other animals, whether simple, mixed, or compound.

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[1] This copy was furnished through the courtesy of Mahlon N. Kline, Chairman of the Committee on Legislation of the National Wholesale Druggists' Association.—EDITOR.

SEC. 3. That for the purpose of this Act an article shall be deemed to be adulterated:

In case of drugs:

First. If, when a drug is sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality, or purity, as determined by the test laid down in the United States Pharmacopœia or National Formulary official at the time of investigation: *Provided*, That no drug defined in the United States Pharmacopœia or National Formulary shall be deemed to be adulterated under this provision if the standard of strength, quality, or purity be plainly stated upon the bottle, box, or other container thereof, although the standard may differ from that determined by the test laid down in the United States Pharmacopœia or National Formulary.

Second. If its strength or purity fall below the professed standard or quality under which it is sold.

In the case of confectionery:

If it contain terra alba, barytes, talc, chrome yellow, or other mineral substance or poisonous color or flavor, or other ingredient deleterious or detrimental to health, or any vinous, malt, or spirituous liquor or compound or narcotic drug.

In the case of food:

First. If any substance has been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength.

Second. If any substance has been substituted wholly or in part for the article.

Third. If any valuable constituent of the article has been wholly or in part abstracted.

Fourth. If it be mixed, colored, powdered, coated, or stained in a manner whereby damage or inferiority is concealed.

Fifth. If it contain any added poisonous or other added deleterious ingredient which may render such article injurious to health: *Provided*, That when in the preparation of food products for shipment they are preserved by any external application applied in such manner that the preservative is necessarily removed mechanically, or by maceration in water, or otherwise, and directions for the removal of said preservative shall be printed on the covering or the package, the provisions of this Act shall be construed as applying only when said products are ready for consumption.

Sixth. If it consists in whole or in part of a filthy, decomposed, or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or one that has died otherwise than by slaughter.

Sec. 4. That the term "misbranded," as used herein, shall apply to all drugs, or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design, or device regarding such article, or the ingredients or substances contained therein which shall be false or misleading in any particular, and to any food or drug product which is falsely branded as to the State, Territory, or country in which it is manufactured or produced.

That for the purposes of this Act an article shall also be deemed to be misbranded:

In case of drugs:

First. If it be an imitation of or offered for sale under the name of another article.

Second. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any such substances contained therein: *Provided*, That nothing in this paragraph shall be construed to apply to the filling of written prescriptions, furnished by regular licensed practicing physicians, and kept on file by druggists, or as to such preparations as are specified and recognized by the United States Pharmacopœia or National Formulary, which are in accordance therewith.

In the case of food:

First. If it be an imitation of or offered for sale under the distinctive name of another article.

Second. If it be labeled or branded so as to deceive or mislead the purchaser, or purport to be a foreign product when not so, or if the contents of the package as originally put up shall have been removed in whole or in part and other contents shall have been placed in such package, or if it fail to bear a statement on the label of the quantity or proportion of any morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any such substances contained therein.

Third. If in package form, and the contents are stated in terms of weight or measure, they are not plainly and correctly stated on the outside of the package.

Fourth. If the package containing it or its label shall bear any statement, design, or device regarding the ingredients or the substances contained therein, which statement, design, or device shall be false or misleading in any particular: *Provided*, That an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded in the following cases:

First. In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, under their own distinctive names, and not an imitation of or offered for sale under the distinctive name of another article, if the name be accompanied on the same label or brand with a statement of the place where said article has been manufactured or produced.

Second. In the case of articles labeled, branded, or tagged so as to plainly indicate that they are compounds, imitations, or blends, and the word "compound," "imitation," or "blend," as the case may be, is plainly stated on the package in which it is offered for sale: *Provided*, That the term blend as used herein shall be construed to mean a mixture of like substances, not excluding harmless coloring or flavoring ingredients used for the purpose of coloring and flavoring only: *And provided further*, That nothing in this Act shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods which contain no unwholesome added ingredient to disclose their trade formulas, except in so far as the provisions of this Act may require to secure freedom from adulteration or misbranding.

SEC. 5. That no dealer shall be prosecuted under the provisions of this Act when he can establish a guaranty signed by the wholesaler, jobber, manufacturer, or other party residing in this State, from whom he purchases such articles, to the effect that the same is not adulterated or misbranded within the meaning of this Act, designating it. Said guaranty, to afford protection, shall contain the name and address of the party or parties making the sale of such articles to such dealer, and in such case said party or parties shall be amenable to the prosecutions, fines, and other penalties which would attach, in due course, to the dealer under the provisions of this Act.

Sec. 6. It shall be the duty of the State Dairy and Food Commissioner to enforce all the provisions of this Act which relate to foods, and it shall be the duty of the State Board of Pharmacy to enforce all the provisions of this Act which relate to drugs.

Sec. 7. This Act shall take effect on the day of

DRAFT OF THE PROPOSED GEORGIA FOOD AND DRUG LAW.[1]

A BILL

To be entitled an Act to prevent the adulteration, misbranding and imitation of foods for man or beast, of beverages, candies and condiments, of medicines, drugs and liquors, or the manufacture and sale thereof in the State of Georgia, prescribing a penalty for the violation hereof; providing for the inspection and analysis of the articles described by the Georgia State Department of Agriculture, charging the State's solicitors with the enforcement hereof, and providing means therefor, and repealing all laws and parts of laws in conflict herewith.

Section 1. Be it enacted, That it shall be unlawful for any person to manufacture, sell or offer for sale within the State of Georgia, any article of food, drugs, medicines, or liquors, which is adulterated or misbranded, or which contains any poisonous or deleterious substance within the meaning of this Act; and any person who shall violate any of the provisions of this section shall be guilty of a misdemeanor, and for each offence shall, upon conviction thereof, be fined not to exceed five hundred dollars, or shall be sentenced to one year's imprisonment, or both such fine and imprisonment, in the discretion of the court; and for each subsequent offence, and on conviction thereof shall be fined not exceeding one thousand dollars, or sentenced to one year's imprisonment or both such fine and imprisonment, in the discretion of the court; *provided*, that in case of feeding stuffs for domestic animals, the penalties imposed under Section 20 of this Act shall apply.

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[1] Only that portion of the draft relating to drugs is here printed, sections 12 to 23 relating more especially to feeding stuffs are omitted.

SEC. 2. Be it enacted, That the examinations of specimens of foods and drugs shall be made by the State Chemist of Georgia, or under his direction and supervision, for the purpose of determining from such examination whether such articles are adulterated or misbranded within the meaning of this Act; and if it shall appear from any such examination that any of such specimens is adulterated or misbranded within the meaning of this Act, the Commissioner of Agriculture shall cause notice thereof to be given to the party from whom such sample was obtained. Any party so notified shall he given an opportunity to be heard before the Commissioner of Agriculture and the Attorney-General, under such rules and regulations as may be prescribed by them, and if it appears that any of the provisions of this Act have been violated by such party, then the Commissioner of Agriculture shall at once certify the facts to the proper prosecuting attorney, with a copy of the results of the analysis, or the examination of such article duly authenticated by the analyst or officer making such examination, under the oath of such officer. That in case it shall appear to the satisfaction of the Commissioner of Agriculture and the Attorney-General that the violation of this Act is properly a subject of interstate commerce, or otherwise comes under the supervision and jurisdiction of the United States, then the Commissioner of Agriculture shall certify the case to the United States District Attorney, in whose district the violation may have been committed; but if it be under the jurisdiction of the courts of this State, then the Commissioner shall certify the case to the solicitor of the court in the county where the offence occurred. It shall be the duty of the State solicitor to prosecute all persons violating any of the provisions of this Act as soon as he receives the evidence transmitted by the Commissioner of Agriculture. After judgment of the court, notice shall be given by publication in such manner as may be prescribed by the rules and regulations aforesaid.

SEC. 3. Be it enacted, That the term "drug," as used in the Act, shall include all medicines and preparations recognized in the United States Pharmacopœia, or National Formulary, for internal or external use, and any substance or mixture of substances intended to be used for the cure, mitigation, or prevention of disease of either man or other animals. The term "food," as used herein shall include all articles used for food, drink, confectionery or condiment by man or other animals, whether simple, mixed or compound.

SEC. 4. Be it enacted, That for the purposes of this Act an article shall be deemed to be adulterated—

In case of drugs:—

First.—If, when a drug is sold under or by a name resognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality or purity, as determined by the test laid down in the United States Pharmacopœia or National Formulary official at the time of investigation; *provided*, that no drug defined in the United States Pharmacopœia or National Formulary shall be deemed to be adulterated under this provision if the standard of strength, quality, or purity be plainly stated upon the bottle, box, or other container thereof, although the standard may differ from that determined by the test laid down in the United States Pharmacopœia or National Formulary.

Second. If its strength or purity fall below the professed standard or quality under which it is sold.

In the case of confectionery:

If it contains terra-alba, barytes, talc, chrome yellow, or other mineral substance or poisonous color or flavor, or other ingredient deleterious or detrimental to health, or any vinous, malt or spirituous liquor, or compound or narcotic drug.

In the case of food:

First. If any substance has been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength.

Second. If any substance has been substituted wholly or in part for the article.

Third. If any valuable constituent of the article has been wholly or in part abstracted.

Fourth. If it be mixed, colored, powdered, coated, or stained in a manner whereby damage or inferiority is concealed.

Fifth. If it contain any added poisonous or other added deleterious ingredient which may render such article injurious to health; *provided*, that when in preparation of food products for shipment they are preserved by any external application applied in such manner that the preservative is necessarily removed mechanically, or by maceration in water, or otherwise. And directions for the removal of said preservative shall be printed on the covering or the package, the provisions of this Act shall be construed as applying only when said products are ready for consumption.

Sixth. If the package, vessel or bottle containing it shall be of such a composition, or carry any attachment made of such a composition of metal or alloy, as will be acted upon in the ordinary course of use by the contents of the package, vessel or bottle in such a way as to produce an injurious, deleterious or poisonous compound.

Seventh. If it consist in whole or in part of a filthy, decomposed, or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or one that has died otherwise than by slaughter.

Sec. 5. Be it enacted, That the term "misbranded," as used herein, shall apply to all drugs, or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design, or device regarding such articles, or the ingredients or substances contained therein which shall be false or misleading in any particular, and to any food or drug product, which is falsely branded, as to the State, Territory, or country in which it is manufactured or produced.

That for the purposes of this Act an article shall also be deemed to be misbranded—

In case of drugs:

First, if it be an imitation of, or offered for sale under the name of another article.

Second. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label in as conspicuous letters as is or may be prescribed by the United States law or rules and regulations of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any such substances contained therein; *provided*, that nothing in this paragraph shall be construed to apply to the filling of written prescriptions, furnished by regular licensed practicing physicians, and kept on file by druggists as required by law, or as to such preparations as are specified and recognized by the United States Pharmacopœia or National Formulary which are in accordance therewith.

In case of food:

First. If it be an imitation of, or offered for sale under the distinctive name of another article.

Second. If it be labeled or branded so as to deceive or mislead the purchaser, or purport to be a foreign product when not so, or is an imitation in package or label of another substance of a previously established name, or which has been trade-marked or patented, or, if the contents of the package as originally put up shall have been removed in whole or in part, and other contents shall have been placed in such package, or, if it fail to bear a statement on the label in conspicuous letters of the quantity or proportion of any morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any of such substances contained therein.

Third. If in package form, and the contents are stated in terms of weight or measure, they are not plainly and correctly stated on the outside of the package.

Fourth. If the package containing it, or its label shall bear any statement, design, or device regarding the ingredients of the substances contained therein, which statement, design, or device shall be false or misleading in any particular; *provided*, that an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded in the following cases:

First. In the case of mixture or compounds which may be now, or from time to time, hereafter known as articles of food, under their own distinctive names, and not an imitation of or offered for sale under the distinctive name of another article, if the name be accompanied on the same label or brand with a statement of the place where said article has been manufactured or produced.

Second. In the case of articles labeled, branded, or tagged, so as to plainly indicate that they are compounds, imitations, or blends, and the word "compound," "imitation," or "blend," as the case may be, is plainly stated in conspicuous letters on the package in which it is offered for sale; *provided*, that the term "blend," as used herein shall be construed to mean a mixture of like substances, not excluding harmless coloring or flavoring ingredients used for the purpose of coloring and flavoring only; and *provided, further*, that nothing in this Act shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods which contain no unwholesome added ingredient to disclose their trade formulas, except in so far as the provisions of this Act may require to secure freedom from adulteration or misbranding; *provided, also*, that this Act shall not apply to stocks of drugs and medicines on hand in this State, until the first day of August, 1908.

SEC. 6. Be it enacted, That no dealer shall be prosecuted under the provisions of this Act when he can establish a guaranty signed by the wholesaler, jobber, manufacturer, or other party residing in the State of Georgia, from whom he purchases such articles, to the effect that the same is not adulterated or misbranded within the meaning of this Act, designating it. Said guaranty, to afford protection, shall contain the name and address of the party or parties making the sale of such articles to such dealer, and in such case the said party or parties shall be amenable to the prosecutions, fines, and other penalties which would attach, in due course, to the dealer under the provisions of this Act.

SEC. 7. Be it enacted, That any article of food, drug, or liquor that is adulterated or misbranded within the meaning of this Act, shall be liable to be proceeded against in any court of the State of Georgia within the county where the same is found, and seized for confiscation by a process of libel for condemnation. And if such article is condemned as being adulterated or misbranded, or of a poisonous or deleterious character, within the meaning of this Act, the same shall be disposed of by destruction or sale, as the said court may direct, and the proceeds thereof, if sold, less the legal costs and charges, shall be paid into the treasury of the State of Georgia, but such goods shall not be sold in any jurisdiction contrary to the provisions of this Act, or the laws of that jurisdiction.

SEC. 8. Be it enacted, That the words "person" or "party," as used in this Act, shall be construed to import both the plural and the singular, as the case demands, and shall include corporations, companies, societies and associations.

When construing and enforcing the provisions of this Act, the act, omission or failure of any officer, agent or other person acting for or employed by the corporation, company, society or association, within the scope of his employment or office, shall in every case be also deemed to be the act, omission or failure of such corporation, company, society or association, as well as that of the person.

SEC. 9. Be it enacted, That the State Department of Agriculture is hereby charged with the duties of inspection and analysis required for the proper enforcement of this Act. That the Commissioner of Agriculture is hereby directed to appoint officers, who shall perform all the duties required in the execution of this Act. That the Commissioner, realizing the responsibilities resting on him for the protection of the lives and health of the people, shall, in making these appointments, be guided by the results of careful and diligent inquiry into the character, fitness and reputation for integrity and industry of all the officers whom he may appoint, who may be in any way intrusted with the execution of this law; that such officers, when appointed, shall hold office during good behavior and attention to duty, and shall not be removed from office except for cause, provided such term of office of said officers shall terminate with that of the office of Commissioner of Agriculture.

SEC. 10. Be it further enacted, That as soon as this Act becomes effective the Commissioner is authorized to appoint by and with the advice and consent of the State Chemist, a chief food and drug inspector for the State of Georgia, who shall receive a salary not to exceed $1,500 per annum, and actual expenses while discharging his duty. His whole time shall be at the disposal of the Commissioner, and his duty shall be to travel about the State as directed, and take samples of such articles as directed, and forward them to the Department of Agriculture for scientific examination and analysis. The State Chemist may also appoint by and with the advice and consent of the Commissioner of Agriculture such additional assistants and experts, not to exceed three, in his office as may be required to carry out the provisions of this Act; the salaries of such assistants and experts to be fixed and adjusted by the Commissioner of Agriculture and the State Chemist, not to exceed $1,500. They may also make such expenditures for apparatus, chemicals and increased laboratory facilities as in their judgment may be required, provided that the total expenditures under this Act for any one year shall not exceed the sum appropriated to carry out the provisions of this Act.

Sec. 11. Be it enacted, That samples for analysis shall be taken by the duly qualified and sworn inspectors, who shall take samples of such articles as may be directed by the Commissioner of Agriculture, and in the manner prescribed below ; whenever practicable, samples shall be taken in original unbroken packages ; said package shall be wrapped in paper and tied securely, and sealed over the cord with sealing-wax, on which the inspector shall impress his official seal. That in cases where it is not practicable to send a sample for analysis in an original package, as, for instance, in case of syrups, or other liquids in barrels, or flour in barrels, etc., the inspector shall take a fair sample of the same in the presence of the seller, place it in a suitable receptable, securely close and wax it and impress his official seal upon the wax and forward the same to the Commissioner of Agriculture. In the execution of his duties the inspector shall have free access at all reasonable hours into any place where it is suspected that impure foods are being manufactured, or wherein any article of food or drink, drug or medicine, adulterated with any deleterious or foreign ingredients exists. In calling for and taking a sample of any goods, the inspector shall tender to the seller the market price asked for the same.

Sec. 23. Be it enacted, That the Commissioner of Agriculture, with the advice of the Attorney-General, shall have authority to establish such rules and regulations as shall not be inconsistent with the provisions of this Act, and as in his judgment will best carry out the requirements thereof. He may exercise discretion as to the class of products he first subjects to rigorous inspection and analysis, realizing that the fullest and most complete execution of this law under a limited appropriation must be a matter of growth. His first efforts shall be more particularly directed to fostering the young and growing agricultural and manufacturing industries of the State, as the dairy, beef, fruit, cotton-seed oil and syrup industries, by suppressing adulteration in butter, cheese, milk, feed-stuffs, ciders, vinegars and syrups, lard and lard compounds.

Sec. 24. Be it further enacted, That in order to enforce and carry out the provisions of this Act the sum of ten thousand dollars, or so much thereof as may be necessary, is hereby appropriated and set aside out of the fees arising from the inspection and analysis of fertilizers, and so much as is necessary is made immediately available That the proceeds arising from the fees of this office be turned into the treasury for the use of the common school fund of the State.

SEC. 25. Be it enacted, That this Act shall be in force and effect from and after the first day of August, 1907.

SEC. 26. Be it further enacted, That all laws and parts of laws in conflict with this Act be, and the same are, hereby repealed.

AMENDMENT TO THE PURE FOOD AND DRUG LAW OF VERMONT.[1]

The following amendment was approved December 10, 1906:

AN ACT in Amendment of and in Addition to No. 148 of the Acts of 1904, entitled "An Act Providing for the Inspection of Food, Drugs and other articles in common use."

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. Section 2 of No. 143 of the acts of 1904, is hereby amended so as to read as follows, viz.:

SEC. 2. The term "drug" as used in this act shall include all medicines and preparations recognized in the United States Pharmacopœia or National Formulary for internal or external use, and any substance or mixture of substances intended to be used for the cure, mitigation or prevention of disease of either man or beast. The term "food" as used herein shall include all articles, whether simple, mixed or compound, used for food, drink, confectionery, or condiments by man or beast.

SEC. 2. Section 3 of No. 143 of the acts of 1904 is hereby amended so as to read as follows, viz.:

SEC. 3. For the purposes of this act an article shall be deemed to be adulterated:

In cases of drugs:

First. If, when a drug is sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality or purity, as determined by the test laid down in the United States Pharmacopœia or National Formulary official at the time of investigation, provided that no drug defined in the United States Pharmacopœia or National Formulary shall be deemed to be adulterated under this provision if the standard of strength, quality or purity be plainly stated upon the bottle, box or other container thereof, although the standard may differ from that determined by the test laid down in the United States Pharmacopœia or National Formulary.

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[1] We are indebted to Mr. J. H. Redsecker, of Lebanon, Pa., for furnishing a copy of this law.—EDITOR.

Second. If its strength or purity falls below the professed standard or quality under which it is sold.

In the case of confectionery:

If it contains terra alba, barytes, talc, chrome yellow, or other mineral substance or poisonous color or flavor, or other ingredient deleterious or detrimental to health, or any vinous, malt or spirituous liquor or compound or narcotic drugs.

In the case of food:

First. If any substance has been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength.

Second. If any substance has been substituted wholly or in part for the article.

Third. If any valuable constituent of the article has been wholly or in part abstracted.

Fourth. If it be mixed, colored, powdered, coated or stained in a manner whereby damage or inferiority is concealed.

Fifth. If it contains any added poisonous or other added deleterious ingredient which may render such article injurious to health; provided, that when in the preparation of food products for shipment they are preserved by any external application applied in such manner that the preservative is necessarily removed mechanically, or by maceration in water or otherwise, and directions for the removal of said preservative shall be printed on the covering of the package, the provisions of this act shall be construed as applying only when said products are ready for consumption.

Sixth. If it consists in whole or in part of a filthy, decomposed or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or one that has died otherwise than by slaughter.

Sec. 3. No. 143 of the acts of 1904, is hereby amended by adding a new section to be numbered section 4, which shall read as follows, viz.:

Sec. 4. The term "misbranded," as used herein, shall apply to all drugs, or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design or device regarding such article, or the ingredients or substances contained therein which shall be false or misleading in any particular, and to any food or drug product which is falsely branded as to the State, Territory or country in which it is manufactured or produced.

For the purposes of this act an article shall also be deemed to be misbranded.

In case of drugs:

First. If it be an imitation of or offered for sale under the name of another article.

Second. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate or acetanilide, or any derivative or preparation of any such substances contained therein.

In the case of food:

First. If it be an imitation of or offered for sale under the distinctive name of another article.

Second. If it be labeled or branded so as to deceive or mislead the purchaser, or purport to be a foreign product when not so, or if the contents of the package as originally put up shall have been removed in whole or in part and other contents shall have been placed in such package, or if it fail to bear a statement on the label of the quantity or proportion of any morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate or acetanilide, or any derivative or preparation of any substances contained therein.

Third. If in package form, and the contents are stated in terms of weight and measure, they are not plainly and correctly stated on the outside of the package.

Fourth. If the package containing it or its label shall bear any statement, design or device regarding the ingredients or the substances contained therein, which statement, design or device shall be false or misleading in any particular; provided that an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded in the following cases:

First. In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, under their own distinctive names, and not an imitation of or offered for sale under the distinctive name of another article, if the name be accompanied on the same label or brand with a statement of the place where said article had been manufactured or produced.

Second. In the case of articles labeled, branded or tagged so as to plainly indicate that they are compounds, imitations or blend, and the word "compound," "imitation," or "blend," as the case may be, is plainly stated on the package in which it is offered for sale; provided that the term "blend" as used herein shall be construed to mean a mixture of like substances, not excluding harmless coloring or flavoring ingredients used for the purpose of coloring and flavoring only; and provided further, that nothing in this act shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods which contain no unwholesome added ingredients to disclose their trade formulas, except in so far as the provisions of this act may require to secure freedom from adulteration or misbranding.

SEC. 4. Section 13 of No. 143 of the acts of 1904, is hereby amended so as to read as follows, viz.:

SEC. 13. An apothecary, druggist or other person who sells arsenic, corrosive sublimate, nux vomica, chloroform, strychnine, morphine, opium, cocaine, carbolic acid or prussic acid, or its salts, shall, at the time of such sale, make a record of such sale in a book kept for that purpose, specifying the kind and quantity of the article sold, and the time when and the name of the person to whom such sale is made, which record shall be open to health officers, members of the State Board of Health and State officials who may wish to examine the same.

SEC. 5. Section 20 of No. 143 of the acts of 1904, is hereby amended so as to read as follows, viz.:

SEC. 20. Justices shall have concurrent jurisdiction with the county court of offences under this act to the extent of fining the respondent fifty dollars, or may bind him over for trial by county court. It shall be the duty of the State's attorney to whom the State Board of Health shall report a violation of this act to cause proceedings to be commenced and prosecuted in the proper court without delay, for the enforcement of the penalties as in such case herein provided.

DRAFT OF A PROPOSED DRUG LAW FOR THE STATE OF PENNSYLVANIA.[1]

An Act for preventing the manufacture or sale of adulterated or misbranded drugs.

Be it enacted—

Section 1. That it shall be unlawful for any person to manufacture or sell or offer for sale any drug which is adulterated or misbranded, within the meaning of this Act, and any person who shall violate any of the provisions of this section shall be guilty of a misdemeanor, and for each offence shall, upon conviction thereof, be fined not to exceed fifty dollars, and for each subsequent offence and conviction thereof shall be fined not to exceed one hundred dollars.

Sec. 2. That the term "drug" as used in this Act shall include all medicines and preparations recognized in the United States Pharmacopœia, the National Formulary or the American Homeopathic Pharmacopœia for internal or external use, and any substance or mixture of substances intended to be used for the cure, mitigation, or prevention of disease of either men or other animals.

Sec. 3. That for the purpose of this Act an article shall be deemed to be adulterated

First. If, when a drug is sold under or by any name recognized by the United States Pharmacopœia, the National Formulary or the American Homeopathic Pharmacopœia, it differs from the standard of strength, quality, or purity, as determined by the tests laid down in the United States Pharmacopœia, the National Formulary or the American Homeopathic Pharmacopœia: *Provided*, That no drugs defined in the United States Pharmacopœia, the National Formulary or the American Homeopathic Pharmacopœia shall be deemed to be adulterated under this provision if the standard of strength, quality, or purity be plainly stated upon the bottle, box, or other container thereof, although the standard may differ from that determined by the test laid down by the United States Pharmacopœia, the National Formulary or the American Homeopathic Pharmacopœia.

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[1] This draft was prepared by George A. Gorgas and further elaborated at a meeting of the committee appointed by the chairman of the joint conferences held at the Philadelphia College of Pharmacy, January 15. The editor is indebted to Mr. Mahlon N. Kline for supplying him with a copy.

Second. If its strength or purity fall below the professed standard or quality under which it is sold.

Sec. 4. That for the purposes of this Act an article shall be deemed to be misbranded:—

First. All drugs, the package or label of which shall bear any statement, design, or device regarding such article, or the ingredients or substance or substances contained therein shall be false or misleading in any particular.

Second. If it be an imitation of or offered for sale under the name of another article.

Third. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label of the true formula of the contained mixture or of the presence of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, acetanilide, acetphenetidine or phenacetine, antipyrine, or any derivative or any preparation of any such substances contained therein. *Provided*, that nothing in this paragraph shall be construed to apply to the filling of written prescriptions, furnished by practicing physicians, dentists and veterinarians and kept on file by druggists, or as to such preparations as are specified and recognized by the United States Pharmacopœia, the National Formulary or the American Homeopathic Pharmacopœia which are made in accordance therewith, and sold under titles designated therein.

Fourth. That the enforcement of this law shall be entrusted to a Commission consisting of the Commissioner of Health, the Attorney General and three (pharmaceutical) members selected by the Governor of the State from the members of the State Pharmaceutical Examining Board; this Commission shall make uniform rules and regulations for carrying out the provision of this Act, including the collection and examination of specimens of drugs manufactured or offered for sale in the State.

Fifth. That the examinations of specimens of drugs shall be made under the direction and supervision of said Commissioners, for the purpose of determining from such examinations whether such articles are adulterated or misbranded within the meaning of this Act; and if it shall appear from any such examination that any of such specimens are adulterated or misbranded within the meaning of this Act, the Commissioners shall cause notice thereof to be given to the party from whom such sample was obtained. Any party so notified shall be given an opportunity to be heard, under such rules and regulations as may be prescribed as aforesaid, and if it appears that any of the provisions of this Act have been violated by such party, then the Commissioners shall at once certify the facts to the proper District Attorney with a copy of the results of the analysis of the examination of such article duly authenticated by the analyst or officer making such examination, under the oath of such officer. After judgment of the Court, notice shall be given by publication in such manner as may be prescribed by the rules and regulations aforesaid.

Sixth. That it shall be the duty of each District Attorney to whom the Commissioners shall report any violation of this Act, to cause appropriate proceedings to be commenced and prosecuted in the proper courts, without delay, for the enforcement of the penalties as in such case herein provided.

Seventh. That no dealer shall be prosecuted under the provisions of this Act when he can establish a guaranty signed by the wholesaler, jobber, manufacturer, or other party from whom he purchases such articles, to the effect that the same is not adulterated or misbranded within the meaning of this Act. Said guaranty, to afford protection, shall contain the name and address of the party or parties making the sale of such articles to such dealer, and in such case said party or parties shall be amenable to the prosecutions, fines, and other penalties which would attach, in due course, to the dealer under the provisions of this Act.

Eighth. That this Act shall not apply to such remedies which may be in the possession of a dealer at the time this law becomes effective.

Ninth. That this Act shall be in force and effect from and after the first day of March, nineteen hundred and eight.

DISCUSSION OF A PURE FOOD AND DRUG LAW FOR THE STATE OF PENNSYLVANIA.

PHARMACEUTICAL MEETING.

The fourth of the series of Pharmaceutical Meetings for 1906–1907 was held in the Museum of the Philadelphia College of Pharmacy on Tuesday evening, January 15th, and, as previously announced, was devoted to a joint conference of members and committees from local organizations interested in the enactment of a State Pure Food and Drug Law. Upwards of 150 persons, representing 15 local organizations, were present. On motion of Prof. Jos. P. Remington, Mr. Wm. L. Cliffe, the Treasurer of the State Pharmaceutical Examining Board, was requested to preside.

Mr. Cliffe, in introducing the subject matter for discussion, said:—

> This meeting is distinctive in that it is an assemblage of representative pharmacists of the State as well as representatives of various medical bodies, called together for the purpose of considering the details of a bill suitable for presentation to the legislature for the purpose of harmonizing the present law with the Federal Pure Food and Drugs Act of June 30, 1906.
>
> It is known to many of us here this evening that a number of bills have been prepared or are in course of preparation for this purpose, and in consideration of this the Committee of the Local Branch of the American Pharmaceutical Association, to whom the matter was referred at the December meeting, have tried to cover the situation by calling this meeting.
>
> There is no doubt that the best results from every point of view are to be obtained in a matter of this kind from deliberate consideration of the various propositions by a body such as this, possessing the technical grasp of the practical details and a sincere desire to deal fairly with the public and themselves.
>
> It is also of interest to note that a number of those outside the professions mentioned, who have been active in advocating and promoting legislation of this character, have accepted this view of the usefulness of this body and are looking for the results of your deliberations, and have deferred precipitate action on this account. For the purpose of facilitating the work before us the Secretary of the Committee, Mr. Wilbert, has prepared a preamble and resolutions that will be properly placed before you for amendment, rejection or adoption as expressed by your votes after thorough discussion.

He further called attention to the apparent need of revising the existing State laws on foods and drugs and then read the following extract from the inaugural speech of Governor Stuart of Pennsylvania, which had just been published in the afternoon papers:—

> No appeal to the lawmaking power for relief should commend itself with greater favor than that for the prohibition of the sale of adulterated food, drugs and beverages. No more serious obligation can be imposed upon public officials than devolves upon those who are entrusted with the protection of the public health by a strict enforcement of the pure food laws. An innocent violator of the law should not be made a scapegoat for the real culprit.
>
> I therefore recommend to the careful consideration of the Legislature the

advisability of such changes as will make the law protect both the people who are the consumers, and who might be imposed upon, and the retailer who unknowingly violates the law by selling the adulterated articles.

I also suggest the advisability of making all pure food legislation conform as nearly as possible to the Federal laws upon the same subject.

Following the reading of this extract, Mr. Cliffe referred to it as additional evidence of the desirability, or the evident need for conservative and rational legislation along the very lines for which the conference had been called.

Mr. Wilbert then read the preamble and set of resolutions that had been prepared by the Committee of the Philadelphia Branch of the American Pharmaceutical Association, which was followed by an animated discussion, lasting for upwards of three hours, resulting finally in the practically unanimous endorsement of the preamble and all of the essential features of the resolutions as originally presented.

Communications received from pharmacists in the western portion of the State indicated that they were prepared to plead for the practical enforcement of the existing law, popularly known as "the act of 1897." In this plea they were joined by a number of pharmacists from the eastern section, particularly from Philadelphia, until it was shown that this act was in many respects inadequate to protect either the public or the retail pharmacist, and was practically impossible to live up to in the provisions that it did contain. While it is true that this act was among the first to recognize "The latest edition of the 'National Formulary' or the 'Pharmacopœia of the United States' regarding quality or impurity," it was also pointed out that if rigidly enforced it would effectually prevent progress or necessary changes in connection with any of the medicaments that were included in the several books enumerated. It was further shown that despite the fact that this law had been in force for nearly ten years, and was being either willfully or innocently disobeyed by practically every pharmacist in the State, but two prosecutions had been made in all that time.

In summing up the reasons why the law of 1897 should be superseded by a new one embodying the fundamental principles of the Pure Food and Drugs Law, Mr. Mahlon N. Kline spoke as follows:

The fundamental principles underlying the Federal Pure Food and Drugs Act are two. First, that every article sold as a medicine and labeled U.S.P. or N.F. shall conform to the standard laid down in these authorities, and that every article differing from the U.S.P. or N.F. standards shall still be permitted to be sold, provided it carries on its own label its professed standard, and is of a quality conforming thereto.

The second is, that any statement made with regard to any article that is sold as a medicine for man or other animal shall be a true statement, or, in the language of the law, shall "not be misleading."

Both these underlying principles can be still more briefly expressed by the words "common honesty," or, applying honest methods in the manufacture and sale of medicines, and providing penalties for those who violate such methods.

The trouble with the law of 1897 is that its provisions are so drastic and inelastic and so limited in its application, that it never has been and never will be enforced. It is not only lack of money and the proper officer to enforce it that is to be held responsible for this, but because everybody feels that, literally construed, there is no one, not even the members of the Board of Pharmacy, who literally does or can carry out its provisions.

U.S.P. and N.F. articles alone are controlled by its provisions, and a drug is defined to be adulterated when it does not come up to the U.S.P. or N.F. standard. Now, as practical experience has demonstrated that at least some U.S.P. standards are faulty and need correction, and cannot fully be carried out in the manufacture of pharmaceutical preparations, it is no wonder that it has been a dead law on our statute books, and it is no wonder that those who study the situation favor its abolition, and a proposition more in line with that which is practicable should take its place.

While they are, perhaps, not conscious of it, those who advocate our remaining under the law of 1897 for a few more years are, in fact, advocating that we do nothing to improve the condition, under which pharmacists are laboring, within the State for several more years. The condition is, that honest pharmacists are in terror because perhaps an impracticable law may be enforced, and are struggling against competition in the sale of preparations made by unscrupulous competitors, who do not fear the law because they feel it will never be enforced.

After some additional discussion, relating largely to minor details, or to the rules and regulations that have been promulgated by the persons charged with the enforcement of the Federal law, the following preamble and set of resolutions were adopted as being the sense of the meeting, and referred to a committee consisting of one member from each of the organizations represented at the conference:—

RESOLUTIONS FAVORING THE ENACTMENT OF A STATE FOOD AND DRUG LAW.

WHEREAS the manufacture or the sale of impure or adulterated foods, drugs, medicines and liquors is fraught with harm to the community and is inimical to the public health, and,

WHEREAS the Senate and the House of Representatives of the United States of America, in Congress assembled, have enacted a law "For preventing the manufacture, sale or transportation of adulterated or misbranded or poisonous or deleterious foods, drugs, medicines and liquors, and for regulating traffic therein, and for other purposes;" and,

WHEREAS, to obviate unnecessary complications and to facilitate the enforcement of the Federal law, officially designated as "The Food and Drugs Act, June 30, 1906," it is desirable that the fundamental principles that are involved be adopted and endorsed by the individual States. Now, therefore,

Be it Resolved that we, representatives and members of medical and pharmaceutical associations in the State of Pennsylvania, in meeting assembled, recognize the value and the importance of rational laws to govern the sale of foods and drugs and to prevent their adulteration and harmful sophistication.

Be it further Resolved that we endorse the fundamental principles of the Federal Pure Food and Drug Law, and that we recommend the enactment of a measure by the Legislature of the State of Pennsylvania similar to that law with the exceptions named in the next following resolution.

Be it further Resolved that we recommend that such a State law be devoid of all unnecessary and vexatious restrictions and that the preparations of the United States Pharmacopœia and of the National Formulary, when sold for medicinal use, and the written prescriptions of duly licensed physicians when dispensed and kept on file by a regular licensed pharmacist, be exempt from the provisions of the clause requiring specific labels.

Be it further Resolved that we recommend that when enacted the enforcement of such a law should be placed in the hands of the State Pharmaceutical Examining Board, and that they be authorized to employ competent investigators, and that a suitable appropriation be made for the enforcement of the law.

The chairman subsequently announced the following names as members of the committee to further consider the resolutions and to outline a suitable pure drug law with the necessary provisions for its enforcement:—

Medical Society of the State of Pennsylvania, Dr. Henry Beates, Jr.

Philadelphia County Medical Society, Dr. Henry Leffmann.

Medical Jurisprudence Society, Dr. Henry W. Cattell.

Pennsylvania State Pharmaceutical Association, John C. Wallace.

Western Pennsylvania Retail Druggists Association, Louis Emanuel.

Philadelphia Association of Retail Druggists, Charles Rehfuss.

Dauphin County Association of Retail Druggists, George C. Gorgas.

Lancaster County Association of Retail Druggists, W. O. Frailey.

Montgomery County Association of Retail Druggists, Walter Rothwell.

Philadelphia Drug Exchange, Mahlon N. Kline.

Philadelphia Wholesale Drug Co., E. R. Gatchell.

Philadelphia College of Pharmacy, Joseph P. Remington.

Philadelphia Branch of the American Pharmaceutical Association, Joseph W. England.

Public Health Defence League, M. I. Wilbert.

Member ex officio, William L. Cliffe.

M. I. WILBERT,
Secretary pro tem.

BOOK REVIEW.

A TEXT-BOOK OF MATERIA MEDICA, THERAPEUTICS, AND PHARMACOLOGY. By George F. Butler, Ph.G., M.D., Associate Professor of Therapeutics in the College of Physicians and Surgeons, Chicago. Fifth edition, thoroughly revised by Smith Ely Jelliffe, M.D., Ph.D., Professor of Pharmacognosy and Instructor in Materia Medica and Therapeutics in Columbia University (College of Physicians and Surgeons), New York. Illustrated. Philadelphia and London: W. B. Saunders Company, 1906.

Butler's Materia Medica has been well received for years and has been favorably reviewed before in this JOURNAL. The present revision is the work of Dr. Jelliffe, who has attempted to bring the book into accord with the new (1905) Pharmacopœia, and the practical results of the newer pharmacology. While it is claimed that the book has been brought into accord with the requirements of the new U.S.P., we notice one instance where the new standards are not given. In calx chlorinata it is stated that the available chlorine is 35 per cent. when it should be 30 per cent. In taking the definitions of the new U.S.P. it might have have been well to have included all of the definition, as under solution of hydrogen dioxide, where the statement as given in the U.S.P. that "it should be kept in a cool place" is omitted. In quoting pharmacopœial definitions the family name is uniformly omitted. Some of the official substances are also apparently omitted, as chrysarobinum, matico and scutellaria. It is a question whether this book would not be of greater value to the student if the pharmacopœial text were entirely omitted and the student were expected to consult that book for his information of pharmacopœial substances. "The arrangement of drugs has been so changed that those drugs whose predominant action is in one system of organs of the body are grouped together, thus suggesting their therapeutic as well as their pharmacological alliances." In this part are retained the valuable features of the earlier editions; some matter has been expunged and the newer matter included.

PHILADELPHIA COLLEGE OF PHARMACY.

The quarterly meeting of the members of the Philadelphia College of Pharmacy was held December 31st, at 4 o'clock, in the Library. The president, Howard B. French, presided.

Thirteen members were present. The minutes of the semi-annual meeting, held September 24th, were read and approved. The minutes of the Board of Trustees for the meetings held September 11th, October 2d, and November 7th, were read by the registrar, and approved.

Mr. Wilbert stated that at the coming session of the Legislature of Pennsylvania there would probably be introduced measures affecting the interests of pharmacy, and suggested the appointment of a new committee to be called the Committee on Legislation, to take cognizance of all new legislation, and to act in conjunction with Committees of allied bodies for the same purpose. This was agreed to, and the president appointed the following named gentlemen, Mahlon N. Kline, chairman; Joseph P. Remington, M. I. Wilbert, William McIntyre, Warren H. Poley.

Mr. Boring alluded to the death of William B. Thompson, a member of the college since 1862, and for many years a member of the Board of the Trustees and secretary of the college, and suggested that a suitable minute be prepared, which was agreed to, and referred to the Committee on Necrology.

Mr. McIntyre alluded to the recent death of Albert E. Ebert, of Chicago, long identified with pharmacy, and said that it was proposed to erect a monument to his memory, and that he would receive any contributions for that purpose.

ABSTRACT FROM THE MINUTES OF THE BOARD OF TRUSTEES OF THE PHILADELPHIA COLLEGE OF PHARMACY.

September 11, 1906. The Committee on Property reported that the ceiling and walls in the Microscopical Laboratory and some of the lecture rooms were being painted and put in order, that all other necessary repairs to the building had been completed, and that the property was in good condition. Committee on Library reported the addition of a large number of volumes. Committee on Instruction submitted an amendment to Article 8, Section 2, of the By Laws, relating to matriculation, which, after being read, was laid over for consideration at the next meeting. Committee on Examination reported that Raymond D. Black, Powell Hampton, George W. Lord, Jr., and Waldo J. Williams had successfully passed the examination for the certificate of Proficiency in Chemistry, and that Finley Page Seibert had successfully passed his examination for the Degree of Doctor in Pharmacy; all of whom were duly elected by the Board. Committee on Membership. Upon a favorable report being submitted, Dr. Alfred Heineberg, Edwin L. Newcomb, C. Robert Weiser, and Manuel Fernandez were elected to active membership in the college.

October 2, 1906. Committee on Examination reported that the examinations of additional students were held on September 28 and 29, 1906. Committee on Instruction brought up for further action the proposed amendment to Article 8, Section 2, which was unanimously adopted.

November 7, 1906. Committee on Library reported the addition of a large number of volumes to the library. Committee on Instruction presented a report in reference to students unable to supply certificates or pass the entrance examination. Committee on Examination submitted a report upon additional students. Committee on Scholarships submitted the names of seven students to whom they recommended that scholarships should be awarded, which was agreed to by the Board. The Registrar read a communication from the Secretary of the Board of Public Education presenting the name of Mitchell Bernstein, a graduate of the Northeast Manual Training School, for a scholarship in the college, which was duly awarded.

C. A. WEIDEMANN,
Recording Secretary.

DECEMBER PHARMACEUTICAL MEETING.

The regular pharmaceutical meeting of the Philadelphia College of Pharmacy was held Tuesday evening, December 18th, with Prof. Joseph P. Remington in the chair.

The principal speaker of the evening was Harry B. Mason, of

Detroit, co-editor of the *Bulletin of Pharmacy*, who gave a timely and interesting address on the subject: "Four Things Every Druggist Should Know About His Business." This paper was published in full in the January issue of this JOURNAL, p. 10.

Henry C. Blair sent a paper on "A Special Form of Check for Paying Bills," which was read in the absence of the author by Edwin L. Newcomb, P.D., and published in the January issue of this JOURNAL, p. 21.

E. Fullerton Cook, P.D., read a paper on "A Simple System for Personal Accounts" which was illustrated by some models of apparatus that he had made. (See p. 36 of the January number.)

Clarence L. Bonta, P.D., read a paper having the title "The Retort Courteous." The paper was devoted to a consideration of the principles underlying successful advertising and was illustrated with a number of charts and specimens of advertisements.

These several papers were discussed by the following persons: A. J. Staudt, William L. Cliffe, Warren H. Poley, Thomas H. Potts, Charles H. Rehfuss, E. R. Gatchell, Henry Kraemer, M. I. Wilbert, C. B. Lowe, David Potts, and the chairman.

Mr. Staudt called attention to the double-page loose-leaf ledger used by F. P. Streeper of Chestnut Hill, Philadelphia, for rendering his monthly bills. He said:

"By inserting a carbon sheet under the folded page the ledger entry and bill that goes to the customer are made at one writing. It is preferable to use a manifolding fountain pen with a firm point, which are specially made for working carbon copies, or as Mr. Streeper uses the system his stenographer makes the entry each day on the typewriter, which makes a very neat bill to send to the customer. By posting the charge slips daily the customer's bill is always ready, or at the end of the month by simply tearing the top sheet off at the perforation the bills are at once ready to be mailed to the customer. After the bill which is sent to the customer is paid the remaining sheet is removed from the *live* ledger to a *dead* ledger and filed for reference purposes."

M. H. Webster and R. C. Pursel presented a paper on "The Estimation of Strychnine in Nux Vomica by the Nitric Acid Process." (See p. 1 of the January number.)

HENRY KRAEMER,
Secretary.

THE AMERICAN
JOURNAL OF PHARMACY

MARCH, 1907.

STANDARDS IN PHARMACEUTICAL EDUCATION.[1]

By Henry Kraemer.

If we consider the present awakening in pharmacy, it may seem to some that we are making very rapid strides, but as a matter of fact the progress of pharmaceutical education in this country has been comparatively slow. The history of pharmacy in this country may be divided into three periods: (1) The pioneer period during the sixteenth century, when there were no physicians, and the general storekeeper who sold dry goods, groceries, books and paints, also sold medicines and prescribed them; (2) the colonial period during the seventeenth and eighteenth centuries, when educated physicians from abroad emigrated to the colonies and prescribed as well as dispensed medicines; (3) the college period, or the period of organization and development, during the nineteenth century, when pharmacy became a distinct profession and business, and colleges of pharmacy were established, these numbering nearly 100 at the present time. We are now entering, after nearly a century, upon the fourth period, namely, that of standards in education, and we are endeavoring to fix the position of pharmacy among the other professions.

The problem of pharmaceutical education involves two phases, namely (1) that of the natural ability and preliminary qualifications of the applicants for entrance to the colleges and schools of pharmacy, and (2) that of the character and kind of instruction that shall be given by a recognized teaching institution in pharmacy.

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[1] Read before the Philadelphia Branch of the American Pharmaceutical Association, February 5, 1907.

Not only are these two classes of standards being considered by the teaching bodies themselves, but also by the boards of pharmacy, and with the enactment of laws in various States it will now be possible for more or less concerted action to be taken throughout the United States.

PRELIMINARY REQUIREMENTS.

Our system of popular education is the boast of our country, and well may it be, for it has been making steady advances during all the years of our national existence. At the present time the facilities for instruction and the opportunities for obtaining a good general education are so ample that it seems hardly credible that any one who is desirous of obtaining an education should fail in the attempt.

It follows logically that as the standard of general education is advanced, the standards in colleges, technical schools and universities will also be advanced, and thus we find to-day that the majority of these institutions are not only constantly improving their curricula but they are seeing to it that those who go to them for instruction are qualified to pursue the prescribed line of studies. The only wonder is that the entrance standards in some of the professional schools have not been advanced more rapidly than they have, for in no other way have they been more handicapped than in this.

It is true there may be some parts of our country where the opportunities for obtaining an education are more or less limited, but this is no argument why those in the vanguard should stop in their course and wait for the center of population to shift a few hundred miles. We know that in Alaska and the Philippines the means for education are not so ample as they are with us, but we are not thinking of stopping to wait for those countries. On the contrary they desire us to go ahead and they will follow as rapidly as possible. And so if the youths of the country districts of Iowa, or Kansas, or Missouri have not, as is claimed by some, the opportunity for obtaining a high-school education, is that any reason why those in Ohio, or Michigan, or Pennsylvania should be excused for neglecting theirs? No, this is not the way of progress.

If there are any two professions or callings where the unfit should be culled out more than in others, it is in those of medicine and pharmacy. These are the professions calling for the highest type of manhood, and at the same time special educational equipment and intellectual acumen. Being largely answerable to himself in the conduct of his business, it is plain that the pharmacist must be of a high moral type, and if he is of the type that he should be to assume such a responsible calling, he will first see to it that his general education warrants him in undertaking its pursuit. But if there are those who have not the moral sense to conscientiously qualify themselves by obtaining the necessary preliminary education, then the teaching bodies should exercise their power to eliminate them. Here is where the highest obligation of the schools and colleges of pharmacy rests, and here is where the supreme test of their sense of their obligation to the public comes in.

Certainly those applicants for entrance who have had opportunities for obtaining an education and have been so indifferent as not to improve them, can hardly be considered fit candidates for the practice of pharmacy. Entrance to a college presupposes a good general education; the studies to be mastered require it, and to admit the unqualified reacts on all those engaged in the practice of pharmacy and in the teaching of pharmacy. It also does harm to those who are still in the public schools, for instead of finishing their courses they discontinue their studies knowing that they can fit themselves by short cuts. It lowers the standard of the schools of pharmacy and so tends to keep away those who are qualified to pursue the work. In short, it lowers the tone of pharmacy at every point. And who can say that it does not eventually make an impression on the general public and influence them in withholding their support, both moral and financial?

I know of a young man who desired to study law, but who had not gone further than the grammar school. When he came to inquire about the terms of admission to the bar, he found that graduation from a high school was required. He then decided to enter school again and go through the high school. Can any one doubt the advantage of such a course to this young man or to the profession of law in requiring him to complete his preliminary education?

There are those who incline to take pity on those applicants in pharmacy who have not the desired amount of preliminary education and who argue that they should be given a chance. But this is a false kind of charity; if the applicants are sincere and have natural ability, they should be advised to go back to school, but if they belong to the shiftless class, they should above all things not be allowed to ally themselves with pharmacy. No, this is not the place for the exercise of charity, particularly when we think of our obligations to the great public who have so long and so implicitly trusted us.

COLLEGE COURSES.

Having once eliminated the unfit, the next highest duty of the colleges of pharmacy is to qualify their students for the work that they may be called upon to do. This may seem like a very trite saying to some of you, and yet I feel warranted in its utterance. We have reached a crisis in pharmaceutical history, and if the pharmacist is to continue a separate and independent existence it must be on the basis of his scientific attainments. The pharmacist has felt his hampered position for some time, but now that the Pure Food and Drugs Act has become effective, we are face to face with the issue. With the United States Pharmacopœia and the National Formulary as the legal standards he will now be held responsible for the identity and quality of the drugs which he sells. The question then is, will he assume this responsibility, and pronounce finally on the quality and efficiency of the drugs and medicines which he dispenses, or will he shift this responsibility whenever possible? If he adopts the latter course, then will he lose in importance and standing to that extent.

By the adoption of the Pure Food and Drugs Act both the responsibility and the obligation of the pharmacist are increased and added importance must attach to his position. He should take as much pride in his ability to pronounce upon the quality of an article guaranteed by the manufacturer, or in making a preparation which he himself guarantees, as he has heretofore taken in his ability to decide upon the compatibility, or to question the dosage, of a prescription. He must stand between the manufacturer and the physician as he has stood between the physician and the public. Too much care cannot be exercised in this direction, for the manufacturer's guarantee may in some instances prove to be only a label.

To do work of this kind means that the pharmacist shall be a master of the Pharmacopœia, that he shall be able to identify any substance in the Pharmacopœia, carry out any of the tests, and make any of the preparations in the Pharmacopœia and National Formulary, processes for which are given. The least, then, that the colleges of pharmacy can do is to prepare their students to employ the Pharmacopœia and the National Formulary as working guides.

EXAMINATIONS BY BOARDS OF PHARMACY.

With the proper preliminary requirements established, and without entering at this time into a discussion of the question as to the number of hours required for the work that should be done, believing as I do that the colleges and schools belonging to the Conference of Teaching Faculties will be able to decide this problem, I may say that no discussion of the educational problem is complete at this time without reference to the nature of the examinations of the Boards of Pharmacy. In years gone by these examinations have been largely theoretical, and hence were not so valuable as they might have been in testing the fitness of a candidate. Happily, there is beginning to be an improvement in this direction and the examinations are becoming more practical. To my way of thinking the aim of the boards of pharmacy should be to determine what a candidate can do. The theory has been given to him in college, and the final test should be to determine whether he has a working knowledge of the materials which he handles. Instead of asking him what are the elementary forms of matter, or what is a water-bath, or to give the family name of a plant yielding a drug, it would be better to give him some drug or chemical to identify, to carry out the tests for purity according to the Pharmacopœia and to make a preparation.

The boards of pharmacy have a very important work to perform in determining the fitness of candidates and in determining whether the colleges are faithfully carrying on their work. As matters are now constituted they are the final arbiters and should be fully cognizant of the great trust which they hold. It should no longer be possible for the unqualified or incompetent to enter college, spend two or three years at college and be given a degree and finally pass a State Board as a registered pharmacist.

THE DUTY OF PHARMACISTS.

Pharmacists themselves also have a very important part to perform in raising pharmacy to the plane that it must occupy to maintain its separate existence. In the first place they should not admit into apprenticeship young men who are deficient in preliminary education, for quite naturally they hope sooner or later to enter the schools of pharmacy. Indeed to admit such as these into apprenticeship is not only an injustice to them but also to the colleges of pharmacy, and this may be considered as one of the fundamental tests as to whether the pharmacist has the true interests of his calling at heart. Pharmacists can at this point be of real service to these young men by encouraging them and advising them to continue their education in the public schools or to acquire it in some other way.

The second duty of the pharmacist is to endeavor to conduct his business in such a manner that the educated young men will be attracted to it (for undoubtedly there is no more interesting work than that connected with the profession of pharmacy), and find something to repay them for their pains, and to appeal to their aspirations as professional men.

The third duty of the pharmacist is to the physician. If the physician is willing to rely upon the pharmacist and to help him in maintaining and re-establishing the profession of pharmacy by prescribing only the preparations and medicines in the Pharmacopœia and National Formulary, and the new and non-official remedies approved by the Council on Pharmacy and Chemistry of the American Medical Association, then should the pharmacist aim to eliminate as rapidly as possible patent medicines, nostrums and sundry articles not used as medicines, or as aids to the sick, or even as toilet preparations, and prepare to give his undivided attention to his profession, which alone by training, education and experience he is qualified to conduct.

In briefly summing up my remarks I may say that I have endeavored to emphasize the essential principles which we must bear in mind.

(1) A good preliminary education is essential to an apprentice and student of pharmacy.

(2) The least that a college or school of pharmacy should do is to send forth graduates that are masters of every detail of the U. S. Pharmacopœia and the National Formulary.

(3) It is the duty of the Board of Pharmacy to determine what

applicants for the certificate of Registered Pharmacist can do rather than what they are able to memorize.

(4) That pharmacists themselves must share in the work of elevating the standards of pharmacy.

If we are clear on these principles, sincere in our professions and earnest in our endeavors, the details can easily be worked out.

THE FOOD AND DRUGS ACT IN ITS RELATION TO PUBLIC HEALTH.

By Charles H. LaWall.

The responsibility of the pharmacist in his attitude toward fraud and quackery was never more important than it is at the present time, and there should be no reluctance on the part of the members of the profession to serve the public in the capacity of disseminators of information concerning this important subject which is everywhere under discussion, the Food and Drugs Act.

In the United States the actual control of the quality of food and drugs within any given State is a power of the State and not of the federal authority, and owing to the previous absence of legislation controlling interstate commerce the authorities within the individual States (usually the Dairy and Food Commissioner) were confined to the boundaries of these States in bringing prosecutions. In order to control the sale of products made outside of the State and shipped into it, the seller, often an innocent victim, had to be proceeded against, and the manufacturer, the real offender, was secure from any punishment as long as he remained without the State.

This condition of affairs, of course, worked hardship upon persons who were not morally responsible, who were made defendants in criminal prosecutions and were compelled to resort to the civil courts for redress, which was usually inadequate.

On June 30, 1906, by the passage of the act known as the Food and Drugs Act, which went into effect legally on January 1, 1907, this condition of affairs was changed, and every article of interstate commerce is now subject to the act, the rules and regulations of which have occasioned much serious thought among the large class of manufacturers of products which come within its scope.

The underlying principles of the act, and the rules and regulations which have been drafted for its enforcement, are not obscure. They are based upon common honesty. That is, no hardship is worked upon persons who sell their products for what they are, without any misrepresentation. This at first glance would not seem to be a harsh requirement, but when we go into the subject a little more fully we are confronted with the fact that the present era of advertising has developed a carelessness of statement to say nothing of numerous instances of wilful misrepresentation suggesting that the allegation of P. T. Barnum that the American people like to be humbugged, was never more true than at the present time.

Academic questions as to the harmfulness of certain preservatives or colors, or substitutes for this or that well-known foodstuff, do not enter into the question at all. The phrase "caveat emptor," let the buyer beware, is not applicable to foodstuffs, for the buyer as a rule is not capable of judging as to the presence or absence of certain constituents which may or may not be harmful according to the idiosyncrasy of the consumer.

For example, fifty or seventy-five years ago the commonly used chemical preservatives, salicylic and benzoic acids and saccharin were unknown and when they were resorted to by manufacturers of foodstuffs it was done secretly and without notice to the consumer. While the presence of a small amount of any one of these substances might not occasion any disturbance in a normal individual there are many instances in which even small amounts are absolutely contraindicated. Under commercial conditions existing previous to the passage of the act mentioned the buyer never could tell just what was contained in a package, which might be marked absolutely pure and be decorated with representations of dozens of medals and prize awards, often based upon superficial judgment of the products so honored.

The misbranding clause is Section 8 of the law and reads as follows:

"That the term 'misbranded' as used herein shall apply to all drugs or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design or device regarding such article, or the ingredients or substances contained therein, which shall be false or misleading in any particular and to any food or drug product which is falsely branded as to the State, territory or country in which it is manufactured or produced."

Since the act has become effective the products of certain large packing houses, which were formerly called potted ham or potted tongue are now labeled "potted meat, ham-flavor" and "potted meat, tongue-flavor." The substance has not been changed. It is simply designated by its right name and all the claims for purity made by these firms in the past are now to be judged by the actions of these same firms when under compulsion and in fear of the law.

Several years ago a well-known Philadelphian became sponsor for a brand of coffee which was advertised and sold under the caption of "tannin-free coffee." This purported to be coffee from which the poisonous (?) tannic acid had been removed. Investigation showed it to be coffee from which a chaff-like substance lying between the segments of the bean had been removed by mechanical means, and, as this chaff-like substance was found to contain less tannic acid than the original coffee, and, as the statement as to the tannic acid being poisonous was equally unwarranted, it was one of the most reprehensible of the class of what would now be termed misbranded substances.

As a matter of fact the tannic acid in coffee is in such intimate combination with the caffeine and other valuable constituents of the bean that it would be absolutely impossible to remove it without destroying the properties of the coffee so that it would be unrecognizable.

The ultimate fate of this article, which perished along with several associated ventures, did not prove a deterrent to another and still more glaring fraud of a similar character which has been advertised during the past year, *i. e.* a brand of coffee called "Digesto Coffee" which claims to be as harmless as the well-known cereal substitutes for this agreeable beverage by virtue of the fact that the poisonous (?) caffeine and poisonous (?) tannic acid have both been removed. I need scarcely say that such claims are without the slightest foundation in fact, and an analysis recently made by me of the contents of a package of the article showed a slightly higher percentage of caffeine than the average in coffee, and no perceptible diminution in the amount of tannic acid.

I refer to both of these instances specifically, as under all previous laws it was impossible to proceed against either of these firms, while under the new law they are both amenable to the section on misbranding.

As regards the subject of drugs, the work of Samuel Hopkins Adams in *Collier's Magazine*, together with the assistance of Mr. Bok in the *Ladies' Home Journal*, is too well known to require repetition, and yet I fear that the force of these arguments is lost upon many persons who look upon them as the fulminations of yellow journalism. Nothing could be further from the truth. The half has never been told and the real truth will probably never be known by the public concerning the numerous changes which have been made in many well-known preparations which must now declare the presence of certain constituents which are enumerated in the body of the law. Among the better known of these substances may be mentioned alcohol, morphine, opium, cocaine, chloroform, chloral hydrate, cannabis indica and acetanilide.

Many proprietors of nostrums which have been entirely dependent upon their alcoholic strength for their medicinal and remedial effect, have changed the formulas so as to be less liable to criticism, still retaining enough of the original features, however, to make them objectionable to those who see through the subterfuge.

The number of persons in the community who are really able to judge such preparations is wofully small and it will require a constant campaign of education for many years to bring the every-day consumer of preparations of this class to a sense of his personal responsibility in such matters.

Even the medical profession has suffered by this gigantic bunco game.

Antikamnia, a proprietary preparation which was advertised for years under the claim that it was a definite synthetic compound, in spite of the fact that every one who knew anything about organic chemistry knew better, has at last been publicly unmasked as a mixture of acetanilide, caffeine and sodium bicarbonate; and in refuge from the necessity of declaring the amount of acetanilde upon the label, the firm which makes it has changed the formula so as to substitute phenacetine for acetanilide, and yet the same unwarranted and extravagant claims are made for the preparation that were made before, with no notice to the medical profession that a radical change has been made in its composition, and entirely ignoring the stultification of the former claims as a definite uniform chemical compound.

Other instances might be cited, but enough has been said, I think, to show you that the effect of the law is being felt by those who have made themselves amenable to it.

One important feature must be remembered. It is this: On every package of foodstuff or drug put up under the new law, the words "Guaranteed under the U. S. Food and Drugs Act, June 30, 1906, Serial No. ——" appears. This is being used in such a way as to make it appear that the Government in some unknown way stands sponsor for the quality of the substance, when in truth it is but a compliance with that part of the Act, Sec. 9, which says:—

"No dealer shall be prosecuted under the provisions of this act when he can establish a guarantee signed by the wholesaler, jobber, manufacturer, or other party residing in the United States, from whom he purchases such article, to the effect that the same is not adulterated or misbranded within the meaning of this act designating it."

Thus it will be seen that the guaranty means nothing more than the word of the manufacturer that he will be responsible in case of prosecution, and I fear that not a few of the guarantees at present published are given without due regard to facts, in the hope that the Department of Agriculture, with the tremendous task confronting it of putting the rules and regulations into practice, may be a long while reaching some of these articles.

Meanwhile many persons will be deluded into purchasing such articles in the belief that the phrase referred to is evidence that the Government is responsible for the claims made, when in point of fact nothing of the kind is meant.

An instance recently coming to my attention, presumably of this kind, is that of an article which is being advertised in the prominent daily newspapers in the form of reading notices (a most reprehensible form of advertising) as a remedy for consumption and bronchial affections. An examination of the substance shows it to be a fictitious product containing oil of turpentine, gum turpentine, with evident traces of copaiba and sandalwood. It bears a label which indicates a somewhat mixed origin, as two widely differing plants of the pine family are included in the botanical name which is given for it.

In the regulation of the narcotic drugs, such as opium and its derivatives, morphine, cocaine, etc., a wonderful step has been taken. If the public could realize the harm that has been done to persons who have unconsciously formed drug habits by taking proprietary catarrh cures there would be universal amazement at the depths of degradation to which a manufacturer will lower himself in order to increase the profit on an article by stimulating an increase in its sale. Instances have come before the authorities at Washington in which manufacturers have frankly admitted that they had added morphine or cocaine to their nostrums in order that their continued use might be assured.

There is much work still to be done in the near future in connection with the enforcement of the act to render its provisions effective, but I believe that I have given enough examples from the hundreds which I have at my disposal to indicate that the ultimate effect of the Food and Drugs Act, if it be wisely enforced, as is expected, will be very material in benefiting the health of the community at large.

PROPRIETARY PREPARATIONS APPROVED BY COUNCIL ON PHARMACY AND CHEMISTRY.

ARISTOCHIN.

Aristochin.—CO $(C_{20}H_{25}N_2O_2)_2 = C_{41}H_{46}N_4O_5$, the neutral carbonic ester of quinine.

Actions and Uses.—The same as those of quinine, but, since it is only slowly acted on by acids, it is said not to produce disturbance of the stomach and to be notably free from tendency to production of cinchonism. Dosage.—The same as that of quinine, in powder, mixed with milk sugar, dry on the tongue or suspended in liquids. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York).

ARISTOL.

A name applied to Thymolis iodidum, U.S.P. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York).

ASPIRIN.

Aspirin $C_6H{\cdot}_4O(CH_3CO){\cdot}\ COOH{\cdot}\ 1 : 2 = C_9H_8O_4$, the acetyl derivative of salicylic acid.

Actions and Uses.—It acts like salicylic acid, over which it possesses the advantage of producing less of the undesired local and systemic side effects, on account of the slow liberation of the salicylic acid. It passes the stomach unchanged, the decomposition beginning in the intestine. Dosage.—0·3 to 1 gramme (5 to 15 grains) in capsules or wafers, or dissolved in sweetened water or dry on the tongue, followed by a swallow of water. The powder should be dispensed in waxed paper. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York).

BENZOSOL.

Benzosol, $C_6H_4(OCH_3)\ C_6H_5COO) = C_{14}H_{12}O_3$, a crystalline compound of guaiacol in which the hydrogen of the hydroxyl is replaced by benzoyl.

Actions and Uses.—Benzosol is decomposed slowly in the intestinal tract into guaiacol and benzoic acid which exert their proper actions. The liberated constituents are absorbed and excreted in the urine. It is not irritating. Its uses are analogous to those of creosote and of benzoic acid. It is recommended in incipient pulmonary tuberculosis, as an intestinal antiseptic in fermentation, diarrhea, typhoid fever, diabetes mellitus and as a urinary disinfectant in cystitis, etc. Dosage.—0·2 to 0·6 gramme (3 to 10 grains), in powder, capsule, pill, or suspended in liquids or as an emulsion. Manufactured by Farbwerke, vorm. Meister, Lucius & Bruening, Hoechst a. M. (Victor Koechl & Co., New York).

BETA-EUCAINE HYDROCHLORIDE.

Beta-eucaine hydrochloride, $C_5H_7N(CH_3)_3\ (C_6H_5COO)\cdot HCl$, the hydrochloride of 2,6,6 trimethyl-4-benzoyl-hydroxypiperidine.

Actions and Uses.—Beta-eucaine hydrochloride is a local anesthetic like cocaine, but weaker and devoid of the stimulating properties of the latter. It does not dilate the pupil, nor does it contract the blood-vessels as does cocaine. It has the advantage of stability even on prolonged boiling. It may be used in all cases in which cocaine is indicated as a local anesthetic, especially in ophthalmology. Dosage.—It may be applied in a 2 to 3 per cent. solution to the eye, 5 to 10 per cent. for nose and throat, and 5 to 10 per cent. for ointment for hemorrhoids. Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering, Berlin (Schering & Glatz, New York).

BETA-NAPHTHOL BENZOATE.

Beta-naphthol benzoate, $C_6H_5 \cdot COO \cdot C_{10}H_7 = C_{17}H_{12}O_2$, the benzoic ester of β-naphthol.

Actions and Uses.—Beta-naphthol benzoate is split up into its constituents on reaching the intestinal tract and acts as an antiseptic. It is said to be diuretic. It is used internally as an intestinal antiseptic in diarrhea and typhoid fever. Externally it has been recommended as a parasiticide in the form of 3 to 10 per cent. ointment, and has been used in psoriasis, eczema, scabies, etc. Dosage.—0·2 to 0·5 gramme (3 to 8 grains); maximum dose, single, 1 gramme (15 grains), daily 4 grammes (60 grains). Manufactured by Fabrik von Heyden, Radebeul near Dresden (Merck & Co., New York).

BETOL.

Betol, $C_6H_4 \cdot OH \cdot COO\ (C_{10}H_7) = C_{17}H_{12}O_3$, the salicylic ester of β-naphtol.

Actions and Uses.—Betol is not affected in the stomach, but is split up in its original components when it reaches the intestinal tract by the pancreatic juice and intestinal secretions. It is believed to act as an intestinal antiseptic and, being excreted in the urine, to act in a similar way in the bladder. It has the anti-rheumatic properties of salicylic acid. It is recommended for intestinal fermentations, catarrh of the bladder, particularly in gonorrheal cystitis, for rheumatism, etc. Dosage.—0·3 to 0·5 gramme (4 to 8 grains) in cachets, milk or emulsion. Manufactured by the Heyden Chemical Works, New York.

BISMAL.

Bismal, $4\ (C_{15}H_{12}O_{10}) \cdot 3Bi(OH)_3 = Bi_3C_{60}H_{57}O_{49}$, a compound of bismuth hydroxide and methylendigallic acid.

Actions and Uses.—Bismal is an astringent and is recommended for the treatment of chronic diarrhea. Dosage.—0·12 to 0·3 gramme (2 to 5 grains) in cachets or powder. Manufactured by E. Merck, Darmstadt. (Merck & Co., New York.)

BOROCHLORETONE.

A mixture of 1 part chloretone with 3 parts boric acid.

Actions and Uses.—An antiseptic and anesthetic, used externally as a surgical dressing powder. Prepared by Parke, Davis & Co., Detroit, Mich.

BROMETONE.

Brometone, 1,1,1-tribrom-2-methyl-propan-2-ol, $CBr_3 \cdot C(OH)(CH_3) \cdot CH_3 = C_4H_7OBr_3$, produced by the reaction of acetone on bromoform.

Actions and Uses.—Brometone is claimed to have the sedative action of the bromides without the disadvantage of producing bromism. In doses of 0·3 gramme (5 grains) four or five times a day, in adults, it is claimed to cause no unpleasant results and to produce no disturbance of the digestive organs, and to have no appreciable effect on the secretions. Its action is prompt and its effect is manifest for several hours. In doses exceeding 1·6 grammes (25 grains) daily it may produce dizziness, vertigo, anorexia, and mental hebetude, all of which symptoms disappear on discontinuance of its use. Therapeutically it has been recommended in mild conditions of excitation and insomnia, in so-called narcotic abstinence, in hysteria, and in nervous affections generally. It relieves some forms of cough and is said to produce amelioration in about 60 per cent. of cases of epilepsy. It has been used to relieve dizziness due to labyrinthine disturbances. Dosage.—The dose is 0·3 gramme (5 grains), to be repeated two or three times during twenty-four hours. Manufactured by Parke, Davis & Co., Detroit, Mich.

BROMIPIN.

A bromine addition product of sesame oil, containing 10 per cent. of bromine in organic combination.

Actions and Uses.—Bromipin acts like the bromides, but as it yields its bromine more slowly it is thought to have less tendency to produce brominism. The combination is not broken up in the stomach, but a portion of the bromine is split off as soon as the oil enters the intestine. The oil with the remaining bromine is easily absorbed, and, similarly to other fats, is largely deposited in the tissues, where it is slowly split up. It is said to be more lasting in its action than the bromides. Dosage.—4 c.c. (1 fluidrachm), increased in cases of epilepsy to from 8 to 32 c.c. (2 to 8 fluidrachms); in emulsion with peppermint water and syrup, or pure, flavored with oil of peppermint. Manufactured by E. Merck, Darmstadt. (Merck & Co., New York.)

BROMIPIN—33⅓ PER CENT.

A 33⅓ per cent. brominized sesame oil. Manufactured by E. Merck, Darmstadt. (Merck & Co., New York.)

BUTYL-CHLORAL HYDRATE.

Actions and Uses.—Its action is similar to that of chloral, except that it is said to be less depressing and more analgetic. It has been especially recommended for facial neuralgia. Dosage.—0·3 to 1·3 grammes (5 to 20 grains).

CALCIUM ICHTHYOL.

A derivative of ichthyol in which calcium is substituted for ammonium. Manufactured by the Ichthyol Company, Hamburg. (Merck & Co., New York.)

CALOMELOL.

A soluble colloidal form of calomel, containing albuminoids.

Actions and Uses.—Its action is the same as that of calomel, but it is claimed to be superior because of its solubility in water, acting more rapidly and efficiently. Calomelol is claimed to be non-irritant and particularly non-toxic. The indications for its use are the same as for calomel. Dosage.—Internally the same as calomel. Externally it is used as a dusting powder, mixed with an equal quantity of starch or of a mixture of starch and zinc oxide, or in the form of calomelol ointment. It should be guarded from the light. Manufactured by the Heyden Chemical Works, New York.

CALOMELOL OINTMENT.

Actions and Uses.—It is a substitute for mercurial ointment, over which it has the advantage of cleanliness, and it is claimed to be distinctly superior as an inunction in syphilis, etc. Dosage.—6 grammes (90 grains) daily for inunction in syphilis. Manufactured by the Heyden Chemical Works, New York.

CASCARA EVACUANT.

A preparation said to contain a bitterless glucoside, obtained from the bark of *Rhamnus Purshiana*, with aromatics.

Actions and Uses.—It is claimed that this preparation possesses the laxative properties of cascara sagrada without the bitterness which characterizes the ordinary extract. It is recommended for the treatment of chronic constipation, for which cascara sagrada is one of the best medicinal agents. Dosage.—As a laxative, 0·6 to 1 c.c. (10 to 15 minims) three times a day; as a purgative, 1·3 to 2 c.c. (20 to 30 minims) morning and evening. Four cubic centimeters (1 fluidrachm) may be given in obstinate cases. Prepared by Parke, Davis & Co., Detroit, Mich.

CASCARA TONIC LAXATIVE GLOBULES.

Each globule is said to contain 0·2 gramme (3 grains) of the bitter glucosides of *Rhamnus Purshiana* suspended in a bland fixed oil, to which aromatics have been added.

Actions and Uses.—The manufacturers claim that it combines the laxative action of cascara with tonic properties of the bitter principle with the advantage of concealment of the disagreeable taste. Dosage.—One or two globules to be taken before retiring. Prepared by Parke, Davis & Co., Detroit, Mich.

CHINAPHENIN.

Chinaphenin, $CO(NH \cdot C_6H_4OC_2H_5)(C_{20}H_{23}N_2O_2) = C_{20}H_{33}N_3O_4$, the quinine carbonic acid ester of phenetidin.

Actions and Uses.—Chinaphenin combines the antiperiodic properties of quinine with the analgesic power of phenacetin, with the advantage of tastelessness and asserted freedom from symptoms of cinchonism produced by the administration of the two remedies in simple mixture. It is recommended in febrile diseases, especially la grippe; in spasmodic conditions, such as whooping-cough; in certain forms of malaria and in neuralgia. Dosage.—Adult: 0·3 to 0·6 gramme (5 to 10 grains) ordinarily, 1·5 to 2 grammes (22 to 30 grains), given in two doses as an antipyretic in neuralgia and malaria; in whooping-cough: 0·13 to 0·3 gramme (2 to 5 grains), according to age. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York).

CHLORBUTANOL.

Chlorbutanol, 1,1,1 - trichlor - 2 - methyl - propan - 2 ol, $CCl_3 \cdot C(OH)(CH_3) \cdot CH_3 = C_4H_7OCl_3$, produced by the reaction of acetone on chloroform.

Actions and Uses.—It is said to be absorbed unchanged, but to be decomposed in the body. It is a local anesthetic with an action weaker than that of cocaine, but sufficient to prevent vomiting from gastric irritation. Its antiseptic action is said to be fifteen times as strong as that of boric acid. It acts on the central nervous system similarly to chloral, and although the claim has been made that hypnotic doses are without effect on the circulation and respiration, independent observers have described a fall of blood pressure and interference with respiration in animals, and consider it fully as dangerous as chloral. In man 100 grains caused severe symptoms, but recovery occurred. It is claimed that no habit is induced, but this may be referable to its restricted employment. It is recommended as a mild local anesthetic, in dentistry, etc., as a preservative for hypodermic solutions, for insomnia, vomiting and for spasmodic conditions. It is also said to be useful as introductory to general anesthesia, lessening excitement and nausea. Dosage.—The dose is from 0·3 to 1·5 gramme (5 to 20 grains) dry or in capsules. Hypodermically as a local anesthetic a saturated aqueous solution may be used.

CHLORETONE.

A name applied to chlorbutanol, which see. Manufactured by Parke, Davis & Co., Detroit, Mich.

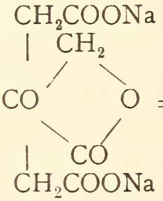
CHLORETONE INHALANT.

A solution of chloretone, camphor, menthol and oil of cinnamon in liquid petrolatum.

Actions and Uses.—An anodyne, antiseptic, and emolient solution for use by inhalation as a very fine spray or nebula. Manufactured by Parke, Davis & Co., Detroit, Mich.

CITARIN.

Citarin,



= $Na_2C_7H_6O_7$, the normal sodium salt of anhydromethylene-citric acid.

Actions and Uses.—This is one of the compounds which it is claimed increase the elimination of uric acid by forming very soluble compounds with that substance. It has been recommended for gout and chronic rheumatism. Dosage.—1 to 2 grammes (15 to 30 grains), largely diluted with water. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York).

CREOSOTAL.

A mixture of carbonic acid esters, analogous to guaiacol carbonate, prepared from creosote.

Actions and Uses.—Creosotal has the same action as creosote, but is claimed to be non-toxic and devoid of irritant properties. It is recommended as a substitute for creosote for internal exhibition in tuberculosis, pneumonia, and as an intestinal antiseptic. Dosage. —From 0·3 to 2·0 grammes (5 to 30 grains) for children, to 1 to 4 grammes (15 to 60 grains) for adults in milk, coffee, wine, cod-liver oil or emulsion. Externally it may be applied undiluted. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York). Fabrik von Heyden, Radebeul, near Dresden.

DENTALONE.

A 30 per cent. solution of chloretone in a mixture of oils of gaultheria, cloves and cassia.

Actions and Uses.—Dentalone possesses pronounced anesthetic properties and is intended for use by dentists in the treatment of exposed nerves in decayed teeth. Prepared by Parke, Davis & Co., Detroit, Mich.

DERMATOL.

A name applied to Bismuthi Subgallas, U. S. P. Manufactured by Meister, Lucius & Bruening, Hoechst a. M. (Victor Koechl & Co., New York).

DIABETIN.

A pure, crystallized fructose (levulose), $CH_2OH·CHOH·CHOH.CHOH·CO·CH_2OH = C_6H_{12}O_6$, absolutely free from dextrose (ordinary glucose).

Actions and Uses.—Levulose is metabolized in the body by other agencies than those that act on dextrose and most of the other sugars and appears to be more completely utilized by the diabetic organism than the other sugars. It is recommended for the nutrition and for sweetening the food and drink of diabetics, in pulmonary tuberculosis, infantile malnutrition and marasmus. Dosage:—It is given in diabetes in daily quantities of 30 to 60 grammes (1 to 2 ounces); in grave forms of the disease the amount is reduced to from 12 to 24 grammes (3 to 6 drachms) daily. Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering, Berlin (Schering & Glatz, New York).

DIONIN.

Dionin, $C_{17}H_{17}NO(OH)(OC_2H_5HCl) + H_2O = (C_{19}H_{21}O_3ClN + H_2O)$, the hydrochloride of the ethyl ester of morphine.

Actions and Uses.—It is claimed that this compound acts like morphine without producing constipation, nausea or lassitude. It is the conclusion of some good observers that it possesses no advantage over codeine. Applied to the eye, it causes a local vasodilation, leading to acute conjunctival edema. Dionin is recommended to relieve pain, especially in respiratory affections, as an antispasmodic in whooping-cough, for insomnia and externally in the treatment of corneal affections, conjunctivitis, iritis, etc. Dosage.—0·015 to 0·06 gramme (¼ to 1 grain). Externally it is applied in 10 to 20 per cent. solutions. Manufactured by E. Merck, Darmstadt. (Merck & Co., New York.)

DIURETIN.

A name applied to theobromine-sodium salicylate, which see. Manufactured by Knoll & Co., Ludwigshafen, Germany (E. Merck & Co., New York).

DUOTAL.

A name applied to Guaiacolis Carbonas, U. S. P. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Company, New York).

DUOTONOL.

A name applied to a mixture of equal parts of calcium tonol and sodium tonol. (See Tonols.)

Actions and Uses and Dosage.—See Glycerophosphates. Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering, Berlin (Schering & Glatz, New York).

ELIXIR EUPNEIN.

A preparation said to contain in each dose of 8 c.c. (2 fluidrachms): heroin 0·0026 gramme (1/24 grain), terpin hydrate 0·13 gramme (2 grains) creosote 0·3 gramme (5 grains), in a menstruum containing 30 per cent. of alcohol with glycerin and aromatic essential oils.

Actions and Uses.—From its composition it appears to be well adapted to use in chronic cough from bronchitis, etc. Dosage.—4 to 12 c.c. (1 to 3 fluidrachms). Prepared by Schieffelin & Co, New York.

ELIXIR SAW PALMETTO.

An elixir of saw palmetto berries, sandal wood and cornsilk.

Actions and Uses.—The constituents of this preparation are credited with diuretic properties and believed to be sedative to the genito-urinary tract and to exert a curative action on the inflamed mucous membrane, especially in chronic cases. Dosage.—4 to 16 c.c. (1 to 4 fluidrachms) three times a day. Prepared by Parke, Davis & Co., Detroit, Mich.

EMPYROFORM.

A condensation product of birch tar and formaldehyde.

Actions and Uses.—Empyroform is an antipuritic, sedative and desiccant. It is said to be superior to tar and free from irritant or toxic effects. It is claimed to be useful in all stages of eczema, psoriasis, lichen, urticaria, prurigo, pityriasis, etc. Dosage.—It is applied as a 5 to 10 per cent. ointment, 10 to 20 per cent. zinc paste, 10 to 20 per cent. tincture, and 37·5 per cent. suspension. Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering Berlin (Schering & Glatz, New York).

EPICARIN.

Epicarin, $C_6H_3(OH)(COOH)(CH_2C_{10}H_6OH)\ 2:3:1 = C_{18}H_{14}O_4$, β-naphthol-hydroxy-toluic acid.

Actions and Uses.—Epicarin is a non-poisonous antiseptic and parasiticide. Administered internally, it is excreted mostly undecomposed. It has been found useful in the treatment of skin-diseases, particularly scabies, tinea tonsurans, prurigo and certain forms of eczema. Dosage.—It is used externally only in the form of 5 to 20 per cent. ointment, with petrolatum or wool fat (lanolin) as base, or in the form of oily or alcoholic solutions (10 per cent.). Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color and Chemical Co., New York.

ERYTHROL TETRANITRATE.

Erythrol tetranitrate, $C_4H_6(NO_3)_4 = C_4H_6O_{12}N_4$, the tetranitrate of erythrite or butane-tetrol, $C_4H_6(OH)_4$.

Actions and Uses.—It is a vasodilator and antispasmodic, like nitroglycerin. Its action is slower and more lasting; it begins in 15 minutes and persists for three or four hours. It is recommended in angina pectoris and cardiac diseases. It is reported as especially useful as a prophylactic in preventing anginal pain. Dosage.—Because of its explosiveness it is marketed in the form of tablets, each containing 0.03 gramme (½ grain). One or two tablets every four to six hours. Manufactured by E. Merck, Darmstadt (Merck & Co., New York).

ETHYLENEDIAMINE.

Ethylenediamine, $C_2H_4(NH_2)_2$, a substitution compound of ethylene and ammonia.

Actions and Uses.—It is said to be non-corrosive. It is recommended as an albumin solvent for the solution of false membranes in diphtheria and similar affections of the mucous membranes. It is recommended for use in the form of kresamine (which see). Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering, Berlin (Schering & Glatz, New York).

EUCAINE.

The "Eucaines" are two closely allied synthetic bases, which were originally differentiated as eucaine "A" and eucaine "B," but are now designated as "Alpha-eucaine" and "Beta-eucaine," respectively, alpha-eucaine being a synthetic derivative of triacetonamine, while beta-eucaine is a synthetic derivative of vinyl-diacetonekalmine. Both of these bases are supplied as hydrochlorides and are recommended as substitutes for cocaine, over which they are claimed to have certain advantages. They are described under alpha-eucaine hydrochloride and beta-eucaine hydrochloride.

(*To be continued.*)

Report of the Council on Pharmacy and Chemistry, from the Journal A. M. A., October 20, 1906.

TYREE'S ANTISEPTIC POWDER.

Tyree's antiseptic powder was assigned for examination to a subcommittee of the Council, which made the following report:

To the Council on Pharmacy and Chemistry: Your subcommittee, to whom was assigned Tyree's Pulv. Antiseptic Comp., marketed by J. S. Tyree, Washington, D. C., reports as follows:

The label on the package states: "This preparation is a scientific combination of borate of sodium, alumen, carbolic acid, glycerin and the crystallized principles of thyme, eucalyptus, gaultheria, and mentha, in the form of a powder," etc.

The statement that the powder contains the crystalline principles of thyme, eucalyptus, gaultheria and mentha is vague and misleading, since the chief medical constituents of eucalyptus and gaultheria are liquids, but it tends to convey the impression that the powder contains the essential constituents of these drugs, namely, thymol, oil of eucalyptus or eucalyptol, oil of wintergreen, or methyl salicylate, and menthol.

The literature supplied to physicians claims its composition to be: "Parts, sod. bor., 50; alumen, 50; ac. carbol., 5; glycerin, 5; the cryst. principles of thyme, 5; eucalyptus, 5; gaultheria, 5, and mentha, 5."

The composition, therefore, might be expressed as follows:—

Sodium borate (borax)	50 parts, or 38·46 per cent.
Alum	50 parts, or 38·46 per cent.
Phenol (carbolic acid)	5 parts, or 3·85 per cent.
Glycerin	5 parts, or 3·85 per cent.
Thymol	5 parts, or 3·85 per cent.
Oil of eucalyptus or eucalyptol	5 parts, or 3.85 per cent.
Oil of gaultheria (or menthyl salicylate)	5 parts, or 3·85 per cent.
Menthol	5 parts, or 3·85 per cent.

Analysis of specimens purchased from different sources in the open market were made under our direction. The reports of the chemists show that Tyree's antiseptic powder contains no borax, or mere traces only, and that it contains no alum, or mere traces only. Instead, the analyses show that boric acid and zinc sulphate are the essential constituents. The amounts of carbolic acid, thymol, menthol, etc., contained in the powder, if present, were far below the quantities indicated by the formula. The presence of glycerin could not be demonstrated, and if present the amount must be very small.

Our chemist reports:—

The result of analysis shows that different samples differ slightly in composition, but that the following indicates the average composition of the product:—

	Per cent.
Zinc sulphate, anhydrous	15.56.
Boric acid	81.26.
Volatile matter at 100 C. for four hours	0.45.

The undetermined portion consists of salicylic acid, carbolic acid, menthol and eucalyptol; possibly other antiseptic agents may be present in very minute quantities.

From the above findings we conclude that Tyree's antiseptic powder is a mixture of boric acid and dried zinc sulphate and antiseptic bodies, such as menthol, salicylic acid and carbolic acid, eucalyptol, etc. From this it can be readily seen that the label which is supposed to set forth the composition of Tyree's antiseptic powder is not in accord with the facts. The powder does not contain either borate of sodium or alum, and the presence of glycerin could not be established. The antiseptic agents, exclusive of the boric acid, are present only in small amounts.

The report of another analyst concludes as follows:

It evidently contains less than the amount stated of the principles of thyme, eucalyptus, wintergreen and mint. It also contains a very small amount indeed of carbolic acid, much less than that stated. We have been unable to identify certainly the presence of glycerin, and it is doubtful if it be present.

From the result of the analysis we feel confident that the preparation is to all intents and purposes a mixture of boric acid and sulphate of zinc.

The carbolic acid, thyme, eucalyptus, wintergreen, etc., if present, are present only in sufficient amount to give the compound a satisfactory odor.

In view of the fact that J. S. Tyree has given wide publicity to a formula which the preceding report has shown to be a deliberate misrepresentation of fact, it is recommended that the article be refused recognition by the Council on Pharmacy and Chemistry, and that this report be published in the *Journal of the American Medical Association.*

The recommendation of the subcommittee was adopted by the Council in accordance with which the report is published.

W. A. Puckner, *Secretary.*

In a letter to the editor of the *Journal of the American Medical Association*, Mr. Tyree admits changing the formula of the powder, and says that it had been his intention to state to the medical profession his reasons for making the change. In commenting on the letter it is noted that Mr. Tyree does not state whether the change was made one year ago or five years ago, but the sample for the first analysis was purchased last February, and the first chemist's report was submitted to the Council March 5, 1906. On April 4th, Mr. Tyree was notified by the Council that the composition of "Tyree's Antiseptic Powder" did not correspond with the formula published by him. Whether or not Mr. Tyree is justified in offering to physicians a preparation as composed chiefly of borax and alum, when in reality it is composed of boric acid and zinc sulphate, is left for physicians to judge.

FRAUD AND DECEPTION IN PREPARATIONS OF COD-LIVER OIL.

The *Journal of the American Medical Association*, October 13, 1906, exposes the fraud and deception practised by certain proprietary firms in putting on the market preparations purporting to contain cod-liver oil, when, in fact, they contain no oil at all. It is conceded by pharmacologists that the value of these remedies depends on the nutritive power of the fat, and any preparation which contains fat must respond to simple tests which the physician can personally apply. The preparations claiming to represent cod-liver oil are in liquid form, and if they contain oil it must be in one of the following forms:

(1) An emulsion of the oil which may be miscible with water, but from which the fat tends to separate and rise to the top. In this form the fat can be seen as globules under the microscope.

(2) A solution, resulting from the saponification of the oil, containing a soap which usually will be alkaline in reaction, especially when mixed with water, and from which fatty acids are separated as a precipitate when the solution is acidified.

(3) A solution of fatty acids. This will be acid in reaction and will be precipitated by the addition of water, in which the fatty acids are not soluble.

An examination of one of these preparations, *e. g.*, Waterbury's Metabolized Cod-Liver Oil, which, it is claimed, "contains the metabolized product obtained by the action of ferments on cod-liver oil," shows that it is neither an emulsion, a solution of soap, nor a solution of fatty acids, and more careful analysis shows that it contains no fat or fat acids (except the merest traces). No intelligent physician should be misled by the extravagant and unfounded claims made for this preparation.

Hagee's Cordial of Cod-Liver Oil is a representative of a class of preparations which claim to "represent the oil, but contain no fat," and are therefore practically worthless. The claims of therapeutic value for such preparations can not be substantiated. Some such remedies are advertised as extracts of cod-liver oil, when, in fact, they are made from cod livers, but not from cod-liver oil. These preparations, if honestly made, might be worthy of a trial, but they are not preparations of cod-liver oil, and should not be so termed. So far as we know, however, no satisfactory evidence is forthcoming that such extractives have any therapeutic value.

The attempt to modify cod-liver oil for therapeutic purposes may be pronounced a failure and the large variety and extensive sale of these preparations appear to be owing to the fact that physicians do not recall the ordinary facts of chemistry, but accept too readily the statements of the manufacturers.

PROGRESS IN PHARMACY.

A QUARTERLY REVIEW OF SOME OF THE MORE IMPORTANT ADVANCES IN PHARMACY AND MATERIA MEDICA.

By M. I. Wilbert,

Apothecary at the German Hospital, Philadelphia, Pa.

The Food and Drugs Act, June 30, 1906, continues to be the leading topic for discussion in pharmaceutical journals and in pharmaceutical circles generally. In many of the larger cities special meetings have been held at which the probable effect of the law, directly as well as indirectly, on the several branches of pharmacy have been discussed at length.

Wholesale druggists and manufacturing pharmacists appear to be heartily in favor of the underlying principles and of the general provisions of the Federal pure food and drug law, despite the fact that it has imposed an enormous amount of additional work and expense for which they can scarcely expect to be adequately recompensed.

The proposition to endorse the Federal law, by corresponding laws in the several States, has aroused considerable opposition on the part of retail pharmacists, who appear to be either indifferent or else fearful lest the additional obligations that would be imposed on them might be too exacting or else involve an undue amount of work or expense to comply with.

In this connection we should remember that pharmacists, as such, have taken little or no part in securing the enactment of the Federal pure food and drug law, and that, as a consequence, they have thus sacrificed no little of their professional independence and prestige.

This apathy on the part of pharmacists is even now being taken advantage of by members of boards of health, Food and Dairy Commissioners and well-meaning but frequently misinformed reformers who are actively at work to secure food and drug legislation along the lines of the National law.

In by far the greater number of State legislatures, now in session, bills for laws of this kind have been introduced, and whether enacted into laws or not, will tend to show the wants or desires of retail pharmacists, and, if opposed or ignored, will seriously reflect on the ability and professional disinterestedness of pharmacists themselves.

Retail pharmacists should, and if they desire to maintain their standing in the community they must, favor pure food and drug legislation that is designed to protect the public. By themselves taking an active interest in the securing of legislation along these lines they could readily prevent the enactment of ill-advised measures that would tend to hamper or restrict them in the pursuance of their business.

That the medical profession in all sections of the country is clearly in favor of pure food and drug legislation was plainly evidenced at the Conference of the Committee on Medical Legislation, of the American Medical Association, with the National Legislative

Council, held at Washington, D. C., December 13th to 15th inclusive.

State legislation was discussed at some length and the representatives of the several State Medical Associations who were present expressed themselves in no uncertain way as being in favor of the individual States endorsing the Federal Food and Drugs Act.

The proceedings of this conference have been published in pamphlet form, comprising sixty-eight pages of closely printed material. This pamphlet contains much that is of interest to pharmacists, and may be obtained from the Secretary of the Bureau of Medical Legislation of the American Medical Association, 103 Dearborn Avenue, Chicago, Ill.

The available literature on pure food and drug legislation is rapidly assuming huge proportions. In addition to the liberal space that is devoted to the question in the current numbers of pharmaceutical journals, a number of reprints of material of this kind have appeared. Not the least interesting of these reprints is a pamphlet of sixty-four pages entitled :—

The Food and Drug Act as it relates to drugs, examined and explained in connection with the rules and regulations for its enforcement. This pamphlet is published by the *National Druggist*, St. Louis, Mo., and contains in addition to the law itself and the regulations pertaining to it, a number of interesting decisions and much additional material bearing more or less directly on the proper interpretation of the Food and Drugs Act.

Digest of National Food and Drugs Act and Regulations, by Mahlon N. Kline, is the title of a pamphlet containing upwards of seventy-two pages that has recently been sent out with the compliments of the Smith, Kline, French Company, Philadelphia. In addition to a transcript of the Food and Drugs Act, and of the rules and regulations for the enforcement of the same, this pamphlet also contains a number of additional opinions, replies and explanations that have been published from time to time; also a legal exposition of the Food and Drugs Act by George L. Douglas, attorney for the Proprietary Association of America; extracts from the recently published "Standard of Purity for Food Products," and much additional information of interest to retail pharmacists.

The Ladies' Home Journal Bill, or a corresponding measure to regulate the manufacture and sale of so-called patent medicines, has been introduced in upwards of ten of the State legislatures now in session. This bill, originally published in the *Ladies' Home Journal* about a year ago, is essentially a formula on the label bill and provides, in addition, that preparations containing one or more of certain specified drugs be labeled *poison.*

Anti-narcotic legislation is also receiving a fair proportion of attention. The most drastic of these measures is probably the one that has been introduced into the legislature of the State of New York, at the instance of the *Evening Journal.* This bill prohibits the sale of opium, chloral, cocaine, eucaine or acetanilid, or any preparation containing them, except on the original written prescription of a physician, dentist or veterinarian.

In several States, notably Texas and Missouri, bills are pending that are designed to improve or to revise the laws governing the practice of pharmacy.

Patent Reform Bill.—Representative Currier, Chairman of the House Committee on Patents, has introduced a bill to substitute the much discussed Mann bill. This bill, popularly known as the Currier bill, is practically a revival of the reciprocity feature of the original Mann bill, but is not restricted to medicine, or medicinal products and includes patents of all kinds.

The Currier bill provides: "That any patent issued to a citizen or subject of a foreign country, shall be upon the same conditions and for the same term as are patents issued by such country to citizens of the United States."

This single provision, it is said, would effectually correct the evils arising from our present system of process and product patents, but would be contrary to the terms of the International Convention for the protection of industrial property and will no doubt be vigorously opposed on this ground.

Incorporation of the Public Health Defense League. A bill has been introduced into the Legislature of the State of New York providing for the incorporation of the Public Health Defense League, under a special charter patterned after that of the Red Cross Society.

The object of this new society is announced as being an organized movement against medical and surgical quacks, frauds in patent medicines or nostrums, and an effort to obtain and to disseminate accurate information concerning practices and conditions of every kind that are dangerous to the public health and morals. (*Journal A. M. A.*, 1907, page 236.)

Sunday Rest in France.—Pharmacists in France are not alone adapting themselves to the recently enacted Sunday Rest Law, but are even going farther and are adopting earlier hours for closing during the week.

At Grenoble, where Sunday closing has been in vogue for some time, the pharmacists have decided to close at 8 P.M. daily and to organize a night service by rotation.

The syndicate of Paris pharmacists recommends that its members adopt 9 P.M. as the hour for closing during the week and to close from midday till the following morning on Sundays and bank holidays. (*Chem. and Drug.*, 1906, page 775.)

Popularity of Pasteur in France.—The *Petit Parisien* has taken a rather interesting plebiscite as to who is thought to be the greatest of nineteenth century Frenchmen. In the voting Pasteur took the lead from the first, followed by Victor Hugo, Gambetta, Napoleon I, Thiers and Lazare Carnot, in the order named. (*Chem. and Drug.*, 1907, page 6.)

Doses in the Codex—The Codex Revision Committee has decided to include a list of maximum doses in a supplement to the Codex, and has delegated the work of drawing up such a list to a special committee including MM. Laudouszy, Marty, Bourquelot, Gilbert and Yvon. (*Chem. and Drug.*, Dec., 1906, page 884.)

The Druggists' Circular has rounded out a half century of its existence. The January, 1907, number of this journal constitutes a fiftieth anniversary number and comprises a total of 320 pages. The 190 or more pages that are devoted to reading matter contain quite an exhaustive review of American pharmacy during the past fifty years. All of the more interesting articles are liberally illustrated and the number itself will no doubt be appreciated as an album of men who have contributed, or are now contributing, to the development of the science of pharmacy in America.

Incompatibility of Pepsin and Pancreatin in liquid preparations.—A report of the Council on Pharmacy and Chemistry of the American Medical Association (*Journal American Medical Association*, February 2, 1907, p. 434) calls renewed attention to the generally well known fact that despite the frequently made statement that pepsin and pancreatin must be incompatible in liquid preparations a number of such mixtures are still being offered by manufacturers or retail pharmacists and are used by physicians.

The Council has investigated a number of preparations of this type and has invariably found them to be practically inert in at least some of the claims made for them. Having demonstrated that pepsin and pancreatin cannot exist in one and the same solution for any reasonable length of time and that preparations that are said to contain these two ferments are sold under impossible claims, the Council recommends:

(1) That the Council on Pharmacy and Chemistry refuse to approve liquid preparations that are claimed to contain both pepsin and pancreatin.

(2) That the medical profession through the *Journal of the American Medical Association* be advised of the fallacy of employing such combinations.

(3) That the attention of manufacturers be called to the worthlessness of such incompatible liquid preparations of pepsin and pancreatin and that they be urged to cease offering such products to the profession.

(4) That since the National Formulary has recognized a preparation of this kind under the title "Elixir Digestivum Compositum" the American Pharmaceutical Association be requested to instruct its committee on the National Formulary to omit this preparation from the next edition.

Acetanilid Mixtures.—The mixtures of acetanilid and other ingredients that formerly were exploited as definite chemical compounds are now being marketed as mixtures, and, in some cases at least, have had their composition changed so as to be totally unrecognizable.

Antikamnia, under the regulations of the Pure Food and Drugs Act, is being marketed as a mixture containing 350 grains of acetphenetidin in each ounce. Pharmacists who are in the habit of filling prescriptions for physicians calling for "antikamnia" in solution will now experience the additional difficulty of being obliged to explain why the new antikamnia differs from the old in its physical properties.

Ammonol.—This preparation is said to be Ammoniumphenylacetamid on one portion of its label and directly under it is said to contain 240 grains of paracetyl-phenetidin in each ounce.

Phenalgin, marketed as an ammoniated phenylacetamide, is labeled as containing 50 per cent. of acetanilidum.

Benzosalin.—Methyl benzoyl salicylate occurs as a white crystalline powder having a slight aromatic odor and taste. The substance melts at from 84 to 85° C. It is nearly insoluble in water, but is soluble in 35 parts of alcohol and is readily soluble in chloroform but somewhat less so in ether. (*Phar. Centralh*, 1906, p. 1053.)

Borovertin.—This is the name that has been applied to hexamethylene tetramine triborate. The substance occurs as a yellowish white powder readily soluble in water and having a distinctly bitter taste. It may be given in doses of from 1 to 4 grammes daily. (*Phar. Centralh.*, 1906, p. 928.)

Castor oil in form of powder.—A recently issued German patent describes a process for preparing a supposedly active preparation of castor oil in powder form. This is accomplished by the addition of light calcined magnesia to an emulsion of castor oil, or by adding a specific quantity of castor oil to the same weight of calcined magnesia that has been moistened with distilled water, and drying the resulting mixture and powdering the residue. (*Phar. Centralh.*, 1907, p. 65.)

Cystopurin—This is said to be a combination of one molecule of hexamethylene tetramine with two molecules of sodium acetate. It occurs as white, nearly tasteless crystals that are readily soluble in either hot or cold water. Cystopurin may be administered in doses of 1 or 2 grammes three times a day. (*Phar. Zeit.*, 1907, page 48.)

Forgenin.—This is said to be tetra methyl ammonium formiate and responds to all of the known reactions for formic acid compounds. It is being recommended, in small doses, as a heart tonic. (*Phar. Zeit.*, 1907, page 48.)

Levurinose is a name given to a yeast that has been desiccated by means of a current of cold air so as to preserve the individual yeast cells intact. This preparation has been recommended to be used in affections of the skin, such as acne, eczema, furunculosis, urticaria, etc. (*Phar. Zeit.*, 1907, page 47.)

Mistura Strzyzowski is the formidable name, applied in Austria, to a mixture containing ferric pyrophosphate, quinine hydrochloride and sodium bromide. This mixture is directed to be prepared as follows :—

Sodium bromide 8·00 is dissolved in distilled water, 40·00; syrup of orange peel, 20·00; alcohol, 10·00. Mix and add a solution of quinine hydrochloride, 1·00 in distilled water, 40·00; and syrup of orange peel, 20·00. Mix, and then add the following, prepared by slightly warming: Ferric pyrophosphate with ammonium citrate, 4·00 in distilled water, 40·00. Mix, and add syrup of orange peel, 40·00.

Dose, one to two teaspoonfuls, with water, two or three times a day.

Novaspirin is the name applied to methyl citric acid ester of salicylic acid. It occurs as a white powder having a slightly acid taste. It is nearly insoluble in water but is readily soluble in alcohol. Novaspirin may be given in doses of 1 gramme three times a day. (*Phar. Zeit.*, 1907, page 9.)

Quinine Phytinate.—Anhydro oxymethylene diphosphate of quinine occurs as a yellow powder, very soluble in water but almost insoluble in alcohol, ether, benzin or chloroform. The substance contains 57 per cent. of quinine and has an intensely bitter taste.

Scarlatin Marpman is an antitoxin preparation that, given internally, is being used as a prophylactic for scarlet fever. It is said to be produced by inoculating animals with infectious material from scarlet-fever patients and inoculating other animals with the serum taken from the first. The serum from the blood of the second animal is used to immunize other animals, and it is from these immunized animals that the antitoxin serum is prepared.

Scarlatin is a yellowish, opalescent liquid having a slight odor and a salty taste. The substance has a specific gravity of from 1·012 to 1·013, is neutral in reaction and gives a copious precipitate with reagents for albumin. (*Phar. Centralh.*, 1907, page 69.)

Solubility of Salicin.—D. B. Dott (*Phar. Jour.*, 1907, page 79) finds that the solubility of salicin, as given in the British Pharmacopœia (1 in 28) is practically correct, while that of the U. S. P. (1 in 21 at 25° C.) is too high.

Using pure salicin, that melted at 201° C., he finds that it has a solubility of 1 in 24 at 25° C., or very nearly that called for by the British Pharmacopœia at ordinary temperatures.

Substitutes for Cocaine.—Dr. Hugo Wintersteiner (*Wiener Med. Wochensch.*, 1906, page 1339) reports a comprehensive comparative study of the use of cocaine and its various substitutes in eye work. Of the numerous substances that have been proposed from time to time he describes tropococain, holocain, eucain, stovain, alypin and novocain at some length and concludes that while it is true that these substances are relatively more stable than cocain, and are therefore more readily sterilized, the numerous objectionable features, such as unreliability, irritating properties and the production of a hyperemia, are so much more objectionable that cocaine must be admitted to be by far the most satisfactory as well as the safest local anesthetic in all varieties of eye work.

Tannisol is a reddish-brown, odorless and tasteless powder that is insoluble in water, ether or benzine, but is soluble in alcohol and in dilute solutions of alkalies or of the alkaline carbonates. It is directed to be used internally in cases of intestinal catarrh, and externally for a variety of inflammatory conditions of the skin. Internally it may be given in doses of 0·50 gramme (*Phar. Centralh.*, 1906, page 1006).

Theolactin.—This name has been applied to a double salt of theobromin sodium and sodium lactate. It occurs as a white hygroscopic powder, readily soluble in water and having a distinctly bitter taste. It is said to be an active diuretic, but is not free from occasional side effects in the form of gastric disturbances. (*Phar. Zeit.*, 1907, page 49.)

Tinctura olea Europeae.—A tincture made with 60 per cent. alcohol from the dried leaves of the European olive has been used as a febrifuge as well as a general tonic in place of the tincture of cinchona bark.

Triacetyl morphin.—This substance has been isolated from a mixture of acetyl derivatives of morphin. Triacetyl morphin melts at from 206 to 208° C., is only slightly soluble in water or cold alcohol, but is readily soluble in acids. With hydrochloric acid it forms a salt that crystallizes in the form of long needles. (*Phar. Centralh.*, 1906, page 928.)

Tulaselactin is the name given by Behring to a substance that is expected to immunize infants against tuberculosis. (*Phar. Centralh.*, 1907, page 24.)

Tulase (*A. J. P.*, 1906, page 582) is the name given by Behring to his immunizing and curative serum for tuberculosis.

This preparation is said to contain all of the constituents of the Koch bacillus. It occurs as a clear fluid which has the general outward characteristics of thin honey. It may be given subcutaneously, intravenously or by mouth. The mixture of tulase with milk, mentioned above, is the form in which it may be administered to infants.

Tulase is now being used in an experimental way, but Behring himself warns against too much reliance being placed on the curative properties of the substance.

CORRESPONDENCE.

Editor of the American Journal of Pharmacy.

Dear Sir:—I send you herewith the result of the votes of the Committee of Revision upon the first instalment of corrections in the U. S. Pharmacopœia, eighth revision, since the passage of the Food and Drugs Act. Very truly yours,

Joseph P. Remington,
Chairman.

CHANGES AND CORRECTIONS IN THE UNITED STATES PHARMACOPOEIA.

(Eighth revision.)

Belladonna Leaf *now* 0·3 per cent. mydriatic alkaloids.

Belladonna Root *now* 0·45 per cent. mydriatic alkaloids.

Colchicum Seed *now* 0·45 per cent. of colchicine.

Ipecac *now* 1·75 per cent. of ipecac alkaloids.

Stramonium *now* 0·25 per cent. of mydriatic alkaloids.

Fluidextract of Belladonna Root *now* 0·4 gramme alkaloids in 100 c.c.

Tincture of Belladonna Leaf *now* 0·03 gramme alkaloids in 100 c.c.

Fluidextract of Colchicum Seed *now* 0·4 gramme alkaloid in 100 c.c.

Tincture of Colchicum Seed *now* 0·04 gramme alkaloid in 100 c.c.

Fluidextract of Ipecac *now* 1·5 gramme alkaloids in 100 c.c.

Fluidextract of Stramonium *now* 0·25 gramme alkaloids in 100 c.c.

Extract of Stramonium *now* 1·0 per cent. alkaloids.

Tincture of Stramonium *now* 0·025 gramme alkaloids in 100 c.c.

Jalap Root *now* 7 per cent. of total resin.

Under the article Petrolatum, p. 336, U. S. P., last paragraph, the sulphuric acid test has been dropped.

February 15, 1907.

BOOK REVIEWS.

Elements of General Chemistry with Experiments. By John H. Long, M.S., Sc.D., Professor of Chemistry and Director of the Chemical Laboratories in the Northwestern University Medical School. Fourth edition, revised and enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co., 1906.

That Professor Long was more than justified in writing this text-book is shown by the fact that since the appearance of the first edition in 1888 two other editions have been issued, and it has been necessary now to issue a fourth edition. The time has gone by in all of the sciences when it can be said that a student is acquainted with fundamental principles unless he has repeated some of the class-room work in the laboratory. As Dr. Long well says: "Repetition is necessary to fix elementary principles thoroughly in the mind of the beginner."

The present edition contains some additional matter on the theories of solution, the conditions of chemical equilibrium, some newer views of chemical theory and the description of several new substances. The book is a remarkably good one for the beginner, and is well adapted to the needs of the Freshmen class in any of the colleges where a general course in inorganic chemistry is given.

Chemical Abstracts. Published by the American Chemical Society. Vol. I, Nos. 1 and 2. Easton, Pa.: The Chemical Publishing Co. January 1 and 20, 1907.

Under this title the American Chemical Society has begun the publication of an independent semi-monthly periodical which shall furnish to American chemists at short intervals a full and comprehensive series of abstracts covering the whole range of pure and applied chemical science together with the titles of American, British, French and German patents on chemical subjects.

The importance and value of this undertaking can hardly be over-estimated. The Journal of the English Chemical Society has long covered somewhat similar ground, but hardly in the complete manner that our American society has now attempted; the Journal of the Society of Chemical Industry has always made a feature of its abstracts and patent references, but these cover applied chemistry only; the German Chemical Society some years ago took over the publication along with its *Berichte* of the *Chemische Centralblatt* for this same purpose of furnishing a complete series of abstracts, but it was felt that our American Chemical Society should take up this work for its own membership, now numbering over 3000 chemists.

So the Society for the future will publish its Journal as a monthly for original papers and communications, of which it has as many as it can possibly find room for in its twelve issues, and the Abstract Journal as a semi-monthly, covering the whole field of pure and applied chemistry under some 30 subdivisions, of which pharmaceutical chemistry is one. That this subject will be cared for in an appreciative and intelligent way can be assumed, as we note that Prof. A. B. Stevens of Ann Arbor is in charge of the abstracts in this field. For those who are not members of the Society the subscription price is as follows: Journal of the American Chemical Society, monthly, $6; Chemical Abstracts, semi-monthly, $6; for both journals sent to the same subscriber, $10. Members of the American Chemical Society receive both journals for the annual membership fee of $8. S. P. SADTLER.

THE PHILADELPHIA BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The regular stated meeting of the Philadelphia Branch of the American Pharmaceutical Association was held on the evening of Friday, January 4, 1907, and was attended by 63 members and visitors.

The minutes of the previous meeting were read and declared approved.

The Committee on Sunday Closing and the Committee on State Legislation made preliminary reports that were received and ordered filed.

On behalf of the Committee on State Legislation Mr. Cliffe said that members of the committee had had an opportunity to confer with the members of a special committee of the State Legislature on the subject and that a joint conference of members of committees interested in the enactment of a State Food and Drug Law would be held at the Philadelphia College of Pharmacy on the evening of Tuesday, January 15, 1907.

The regular program for the evening was then proceeded with. This consisted of a discussion of "The Debasing Influences of Fraudulent Nostrums."

The first communication, by Dr. Solomon Solis Cohen, was devoted to the consideration of "Secrecy and Fraud as Deterring Factors to the Progress of Medicine." Dr. Cohen, in the course of his remarks, said that progress means an ascent from little or no knowledge to knowledge, and from knowledge to greater knowledge. Secrecy is the withholding of knowledge and breeds ignorance, while fraud is even worse than ignorance in that it is designed to mislead.

Dr. Cohen also asserted that therapeutics was difficult enough under the most favorable conditions and that in cases where a physician is confronted with secrecy or fraud, in the statements made in connection with medicinal preparations, he is likely to be misled himself and to do untold harm to his patients.

In concluding, the speaker referred to a number of specific preparations which have been discovered to differ materially in composition from what was claimed for them. He also expressed the hope that the Federal Pure Food and Drugs Law would be instrumental in leading manufacturers to more duly appreciate the need for a greater degree of honesty in the exploitation of their wares. If pharmacy is to make progress and if medicine is to make progress it will necessitate a full and complete knowledge of the composition and action of the substances used in the treatment of diseases.

The next communication, by Dr. Henry Leffmann, dealt with: "Known and Unknown Changes in the Composition of well known Nostrums."

Dr. Leffmann said that the question of secrecy was one of the most intricate problems and one that involved a number of factors.

Secrecy in connection with nostrums, the composition of which was known only to some one or more individuals, but not to all was an objectionable feature and frequently led to arbitrary and in many instances dangerous changes in the composition and the action of nostrums.

Dr. Leffmann then called attention to a number of specific instances in which it was known that changes had been made in the composition of widely advertised nostrums and also pointed out how these changes might be injurious to the consumer.

"Criminal Responsibility in the Sale of Abortifacients" was the subject matter of the communication by Dr. Henry Beates, Jr.

Dr. Beates referred to the various statutes relating to the use, sale or distribution of abortifacients and condemned, in no uncertain terms, the practice of advertising, in lay journals, articles designed to prevent conception or to produce abortion. He held that additional publicity might well be given to the serious nature of the questions involved, and urged that steps be taken to prevent the use of the United States mails by newspapers and magazines publishing advertisements of abortifacients or of instruments designed to prevent conception.

Dr. John B. Roberts, in opening the general discussion of the question, asserted that there certainly could be no difference of opinion on the degrading influences of practices that, as had been shown by the previous speakers, tended to convert pharmacists and pharmaceutical manufacturers into liars and medical practitioners into frauds and fakirs.

The subject matter was further discussed by Dr. Henry W. Cattell, Dr. F. E. Stewart, Dr. C. B. Lowe and Messrs. Remington, LaWall, Turner, Thum, Beringer, Vanderkleed, Cable, Westcott, Wilbert and Cliffe.

Mr. Cliffe presented the following resolutions, which, on motion, were unanimously adopted:

Resolved that the Philadelphia Branch of the American Pharmaceutical Association condemns the advertisement in drug journals, magazines and newspapers of abortefacient medicines and deprecates their sale by reputable pharmacists.

Resolved that all members of this branch be urged to exclude such medicines and articles from their stocks.

The secretary then read a communication entitled "Objectionable Side Lines to the Practice of Medicine," specifically mentioning several profit-sharing and stock-distributing schemes that are now doing business in the city of Philadelphia.

This communication was, on motion, directed to be forwarded to the Secretary of the Philadelphia County Medical Society with the offer to submit additional evidence to the officials of that organization.

There being no further business the meeting was declared adjourned.

FEBRUARY MEETING.

The regular stated meeting of the Philadelphia Branch of the American Pharmaceutical Association was held on the evening of Tuesday, February 5, 1907, in the Hall of the College of Physicians.

The subject under discussion, "Higher Educational Requirements for Pharmacists," has attracted considerable attention during the past year or more, and it was therefore not surprising to find that retail pharmacists attending this meeting were comparatively well informed on questions relating to education, and fully appreciated the need for more rapid advancement along educational lines in the future.

The first speaker on the subject, Mr. William L. Cliffe, in discussing "The Practical Needs for Higher Education in Pharmacy," called attention to the fact that the people at large are rapidly becoming more thoroughly familiarized with the needs and the wants of the practice of pharmacy.

He believes that with the further elimination of empiricism and mysticism from the science of medicine more will be expected of pharmacists, and they in turn will be required to be educated in every way.

Prof. Henry Kraemer, in speaking on "Standards in Pharmaceutical Education," (see p. 101) called attention to the fact that up to the present time the progress of pharmacy in this country had been comparatively slow and that we are now entering on an era of more rapid development. He believes that the enactment of pure food and drug laws will add great additional responsibility to the duties of the retail pharmacist and will also tend to more sharply define the corresponding duties of the colleges and of the boards of pharmacy.

Dr. Horatio C. Wood, Jr., in speaking on "The Future Elaboration of a Course in Pharmacy," said that, as a commercial pursuit, the business of pharmacy must necessarily be one of limited scope and possibilities; as a profession, however, pharmacy can be developed into an occupation of laudable aims and high ideals. He believes that the pharmacist should develop as the assistant and the adviser of the physician, who in turn must depend more and more on the efforts of the pharmacist to select for him and to improve on the efficiency of the available articles of the materia medica.

Prof. I. V. S. Stanislaus, in opening the general discussion, gave it as his opinion that the pharmacist of the future would again hold the same relative position to the public as did the apothecary of old.

The pharmacist of the future will be the chemist of the people, the food and drug analyst, the assistant and adviser of the physician, in all matters relating to materia medica and chemistry, and will, therefore, practically be the sanitarian of the community.

The subject was further discussed by Messrs. John K. Thum, Franklin Apple, Jacob Eppstein, M. I. Wilbert, H. C. Blair, E. Fullerton Cook, John Hahn and Dr. F. E. Stewart. From the general trend of this discussion it was plainly evident that the better informed retail pharmacists deeply appreciate their responsibility to the public, and are willing and even anxious to meet their obligations fully. At no time in the history of pharmacy in this country has it been so evident that the mentally and morally poor man should not be allowed to jeopardize the health and even the lives of his fellow beings as now.

It is clearly evident that pharmacists are beginning to realize that a full and complete appreciation of their duties to society at large must of necessity react to their own pecuniary advantage and will in addition procure for them the respect and the admiration of their fellow men.

M. I. WILBERT,
Secretary.

A REVIEW OF THE OPSONINS AND BACTERIAL VACCINES.[1]

BY E. M. HOUGHTON.

As requested by the *Therapeutic Gazette*, I shall attempt to describe as succinctly as possible the theory of the opsonins and the therapeutic results that have been obtained by the application of the new theory. As the years go by we realize more thoroughly the correctness of the prophetic belief of the "Immortal Pasteur," that the day would come when it would be possible to eradicate the infectious diseases by vaccination.

We are indebted to Metchnikoff for calling attention to and explaining the rôle of the white blood cells in the defence of the body against bacterial invasion, but the phenomenon of phagocytosis is not so simple as it at first appeared, as little by little new facts are developed which amplify our knowledge of the subject.

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[1] Reprinted from *Therapeutic Gazette*, January 15, 1907.

It was shown by Denys and Leclef, in 1895, that when rabbits were immunized against *Streptococcus pyogenes* the serum acquired but slight bactericidal properties, but that such serum, when brought in contact with the leucocytes of normal or immunized rabbits, greatly enhanced their phagocytic activity. Conversely no acceleration of phagocytosis was observed when the corpuscles were brought in contact with the serum of a normal animal.

Mennes two years later confirmed this by showing that similar results were obtained from the blood serum of guinea-pigs treated with cultures or toxins of Pneumococci.

A method of measuring the phagocytic activity of the leucocytes was developed by Leishman in 1902. In 1903 Wright and Douglas made an extensive study of the phagocytes, when brought in contact with suspensions of *Staphylococcus pyogenes*, and were able to show:

(1) Quoting from the original: "We have here conclusive proof that the blood fluids modify the bacteria in a manner which renders them a ready prey to the phagocytes. We may speak of this as an 'opsonic' effect (*opsono* [a Latin verb], I cater for; I prepare victuals for), and we may employ the term 'opsonins' to designate the elements in the blood fluids which produce this effect."

(2) Normal blood serum and plasma possess the same opsonic action upon bacteria.

(3) Serum loses its opsonic action when heated to 60° C. This is spoken of as inactivated serum.

(4) Inactivated serum and physiological salt solution have the same influence upon phagocytosis.

(5) "The opsonic power of the blood fluids disappears gradually on standing," losing about 50 per cent. of its activity in five or six days.

(6) An anti-opsonic effect is noted when blood serum is digested with typhoid bacilli.

(7) When a condition of immunity is conferred upon patients infected by Staphylococci, by vaccination with heated cultures of Staphylococci, the opsonic action of the patient's blood serum is greatly augmented.

Neufeld and Rimpau (1904) found in antistreptococcic and pneumococcic sera evidence of substances which, while inactive towards leucocytes, possessed very marked opsonic or sensitizing action, as they termed it, toward corresponding cultures of streptococci and pneumococci.

Ross (*Lancet*, November, 1906) summarizes our knowledge of the opsonins as follows:

"(1) Opsonins act by chemically uniting with the invading bacteria, and so altering them that the leucocytes are able to phagocyte the bacteria and destroy them. It is important to remember that these substances do not stimulate or otherwise affect the leucocytes.

"(2) It is probable that there are present many varieties of opsonins in the blood plasma, each having to do with combating a particular kind of microbic invasion.

"(3) Opsonins have been shown to be distinct from other bacteriotropic substances, such as the bacteriolysins, the agglutinins, and the antitoxins."

The leucocytes of healthy or diseased persons seem to be equally active when brought in contact with the same serum, hence the amount of opsonins present in the blood of an individual determines, according to the opsonic theory, his susceptibility to bacterial invasion.

TECHNIQUE.

To measure the resistance of the patient to such invasion, or to find out his opsonic index, special technique has been developed, which may be briefly described as follows:

I. EMULSIONS OF BACTERIA.

Twenty-four-hour or younger growths of the rapid-growing bacteria, as Staphylococci, Streptococci, Pneumococci, Gonococci and Colon bacilli, upon inclined agar are washed off with normal saline solution. After the mixture has sedimented, the upper, whitish layer composed of fluid and bacteria is removed with a pipette, and the finer clumps of bacteria precipitated by placing the fluid in a rapidly rotated centrifuge for a few minutes. The supernatant layer, which is still opalescent and is called a bacterial emulsion, should if suitable for work contain the germs in a well-separated condition.

Cultures of tubercle germs are heated, and ground in a mortar with salt solution until the mass is well broken up, and then centrifugated. In case glycerin cultures are used, such as are left in the manufacture of Koch's old tuberculin, the glycerin must be removed by repeated washing with water and finally with 1·5 per cent. salt solution. The washed culture is worked up in a mortar and centrifugated until the clumps are practically all thrown down, and the cloudy layer or emulsion is removed.

The emulsions must be of uniform density. Wright computed the number of germs in a given volume by counting, but McFarland and L'Engle devised an apparatus which is called a nephelometer, consisting essentially of mixtures of $BaSO_4$, put up in sealed tubes, which correspond to solutions containing from 1 to 10 per cent. of $BaCl_2$, which serve as standards. The turbidity of the emulsion is compared in similar layer with the standard tubes of $BaSO_4$. They found that the tube containing "5 per cent. of $BaCl_2$ corresponds to the most useful bacterial suspension." The permanency of the emulsions varies a good deal. Suspensions of the gonococci should be used at once, staphylococci within two days, etc., while the emulsion of tubercle germs may be employed indefinitely.

II. WASHED WHITE BLOOD-CORPUSCLES.

The finger or lobe of the ear is punctured as in making a blood count, and the blood is allowed to drop directly into normal saline, ·85 per cent. solution, containing about 1 per cent. sodium citrate; this decalcifies the blood and prevents clotting. The corpuscles are completely precipitated in the centrifuge, and then repeatedly washed with ·85 per cent. saline and centrifugated, until all traces of the citrate and serum are removed. After the final precipitation the saline solution is withdrawn, and the thin upper grayish layer of the sediment, the leucocytic cream, consisting for the most part of washed white blood cells, is removed.

III. THE SERUM.

Blood is obtained in the usual way, but is collected in small, bent, glass tubes, which can be readily held in the centrifuge and the serum separated. In obtaining normal serum, care must be exercised in selecting a healthy subject, or, what is better, obtain serum from the mixed blood of several normal persons' "Pool."

IV. STAIN.

With the exception of Malta fever and tubercle bacilli, Leishman's stain, consisting of eosin and methylene-blue, in combination, or Jenner's stain, is employed. Carbol-fuchsin is employed for the tubercle bacilli.

METHOD OF OBTAINING OPSONIC INDEX.

Special capillary pipettes, graduated into equal divisions, are required; then by means of a rubber tube or bulb equal quantities of washed corpuscles, bacterial emulsion, and patient's serum are taken up, and all blown out upon a glass slide and thoroughly mixed. The mixture is then drawn up in a small pipette, sealed, and placed in an incubator of the ordinary type, or preferably in an opsonic incubator as proposed by Freeman; it is heated to 37° to 40° C. for fifteen minutes. A similar tube is prepared, except that the normal serum or "Pool" is employed instead of the patient's serum. At the end of fifteen minutes the smears on microscopical slides are made from each tube, fixed, and stained. A good field is selected, one containing many leucocytes, the number of germs counted in the first fifty or hundred observed, and an average per leucocyte determined. If the average in the mixture containing the normal serum is two, we would say that the normal opsonic index is two, and if the mixture containing the patient's blood serum is one per corpuscle, we would say that his index was one-half, etc.

Wright and his pupils, as the result of numerous observations, classify diseases due to bacterial infections:

(1) "Diseases in which the bacterial process is strictly localized" or "shut off from the lymph and blood circulations." Furunculosis, lupus, tuberculosis, etc., in fact most chronic infections, belong to this class. "In this class the opsonic index of the blood is persistently below normal, owing to the absence of immunizing stimuli."

(2) "Diseases in which the bacterial process is but loosely shut off, especially from the lymph circulation." In these, usually acute, infections immunizing products from the invading bacteria from time to time get into the circulation, and the opsonic index may be normal or above or below normal. Good examples of this class are tuberculous joints, etc.

(3) "Diseases in which the bacterial infection is in the blood stream." In this class belong acute infectious diseases, septicemia, endocarditis, Malta fever, etc. In these "the opsonic index is generally below normal."

Wright and Douglas lay down the following general principles for treating cases of bacterial infections:

(1) "Isolate in pure culture the causative microörganism."

(2) "Estimate the opsonic power of the patient's blood to this microörganism."

(3) "If the opsonic index be at or below normal, prepare and standardize a vaccine from this microörganism."

(4) "Inoculate the patient with this vaccine with appropriate doses and at proper intervals, as shown by a systematic estimation of the opsonic content of the patient's blood."

PREPARATION OF VACCINES.

The vaccines, with the exception of the tubercle vaccine, consist of emulsions of heated cultures of the particular germ producing the infection. Luxuriant cultures of the desired organism are grown upon inclined agar; the growth is then removed with salt solution and a glass rod, and thoroughly emulsified by shaking in a test-tube, in order to get the germs well distributed and the clumps broken up. The number of germs in a given quantity of the emulsion is then determined by comparing the number of germs and red blood-corpuscles in a mixture of one part emulsion, one part freshly drawn blood, and three parts of normal salt solution. If there are ten times as many germs as blood-corpuscles, the bacterial suspension contains approximately 45,000,000 germs per cubic centimeter. The number of germs present will of course vary with the density of the emulsion. The bacterial suspension is heated at the lowest temperature and for the shortest possible time to kill it. The amount of sterilization will differ with different organisms; 60° C. or less maintained for thirty minutes or less is usually sufficient. Cultures from the vaccine are finally made to insure that it is sterile and safe and some preservative added.

Tubercle Vaccine.—This is the "New Tuberculin Koch," an opalescent fluid, containing the active principle of tuberle bacilli obtained according to the method of Koch.

THERAPEUTIC APPLICATION.

After a proper diagnosis has been made, the patient's opsonic index taken, and the appropriate vaccine prepared, the patient receives his initial injection of several hundred millions more or less of the heated bacteria, and his opsonic index is watched. A short time after the inoculation is made the opsonic index falls lower than it was previous to the injection. This Wright has named the "negative phase." Sooner or later, from a few hours to several days, the opsonic index rises above the starting-point. This is called the "positive phase." The amount of the opsonins in the blood remains stationary for a variable length of time, and then diminishes. As soon as their diminution is noted, a second injection of the vaccine is given, which is followed by a negative phase, but less pronounced than before. Soon the positive phase comes on, reaching a higher level than previously. Thus the injections are repeated from time to time according to the opsonic index of the patient's blood, and the positive phase gradually attains a higher and higher level, until it may be as high as or considerably higher than that of a normal person. In other words, if the vaccinations are properly given, "never during a negative phase," and as a result the patient's tissues are stimulated to an increased production of the opsonins, phagocytosis is increased, the invading bacteria are disposed of, and the patient recovers from his infection. The proper handling of patients according to this method requires the greatest attention to details of technique for obtaining the opsonic index, preparing the vaccine, and the administration of the proper dose at the proper time.

It is too early to know the ultimate results that may be expected from the use of the vaccines, but from personal observation, conversation with other workers, and numerous reports, most of which are incomplete, it seems reasonable to believe that for localized bacterial infections much may be accomplished. Especially does this seem probable for acne, furunculosis, sycosis, abscesses, and lupus, adenitis, and other similar tubercular infections.

In incipient pulmonary tuberculosis encouraging results have been obtained where minute doses of new tuberculin, $\frac{1}{1000}$ of a milligramme more or less, have been given, which seemingly show that Koch's original observations were well grounded in fact.

Something has been accomplished in those diseases in which the bacterial infection is in the blood stream.

After a careful consideration of the literature of the entire subject I believe we should recognize the new therapy as an experimental procedure of much promise, but until more extended observations have been made the use of the vaccines should not be looked upon as a settled method of treatment.

PHARMACEUTICAL MEETING.

The stated Pharmaceutical Meeting of the Philadelphia College of Pharmacy was held on Tuesday afternoon, February 19th, with M. I. Wilbert, Ph.M., in the chair.

Prof. Charles H. La Wall was the first speaker on the program, and presented a paper on "The Food and Drugs Act in its Relation to Public Health." (See p. 107.) The author reviewed conditions leading up to the passage of the United States Food and Drugs Act of June, 1906, and in considering the detailed provisions of the law, paid particular attention to the section on misbranding.

Mr. Thomas H. Potts called attention to a form of deception in which it is made to appear that the serial number placed by manufacturers on packages is a Government guarantee number.

Prof. Henry Kraemer said that there is a need for more workers along this line. He referred to the work which has been done by Dr. Wiley, and said that he deserved great credit not only for his efforts in securing the adoption of the Pure Food and Drugs Act, but also for standing out so many years against the moneyed interests represented by unscrupulous manufacturers.

The subject of drug legislation was brought up and Mr. Wilbert said that pharmacists were making a mistake in not taking an active part in it. He stated that in Vermont the druggists had hesitated in the matter, and that the grocers of that State had succeeded in having a law enacted which may prove inimical to the interests of pharmacists. He then called attention to the bill introduced in the Pennsylvania legislature which is practically that of the Wholesale Grocers' Association, and does not exempt physicians' prescriptions and the preparations of the United States Pharmacopœia and National Formulary in those portions of the bill which relate to labelling. Mr. Wilbert further stated that this bill is being introduced in the legislatures in a number of States, while the bill formulated by the *Ladies' Home Journal* has now been introduced by twenty State legislatures. It was also mentioned that a bill drafted by the National Wholesale Druggists' Association is being introduced in some States, and that still another draft is that of the Proprietors' Association.

Mr. Potts spoke of the meeting in Chicago of the representatives of the National Association of Retail Druggists, the National

Wholesale Druggists' Association and the Proprietors' Association, and said that an attempt was made to have a law drafted which would require both physicians and retail druggists to use labels giving details as to the composition of medicines prescribed and dispensed. He then remarked that retail druggists are not opposed to legislation which is fair, but that they are not in favor of hasty legislation, which, as proposed in some instances, would drive retail druggists out of business.

A paper on "Sunday Closing: A Means of Elevating Pharmacy," by Clarence H. Campbell, a local druggist, was read in the absence of the author by George B. Weidemann, P.D. The paper contained the statement that at the recent conventions of the National Association of Retail Druggists held in St. Louis and Atlanta, resolutions were unanimously adopted favoring Sunday closing, and that helpful suggestions had been made as to the ways and means of bringing about this end. The writer was of the opinion that the long hours without proportionate compensation has an influence in keeping young men from taking up pharmacy in the first place, or of pursuing it after qualifying for the work. Mr. Campbell also considered some of the arguments that have already been advanced in some of the previous issues of this JOURNAL as to the necessity of reasonable rest and recreation in broadening the horizon of the pharmacist.

Mr. Thomas H. Potts also presented a communication on the subject of Sunday closing and shorter hours. After considering the need of a more liberal spirit on the part of pharmacists and the necessity for an improvement in the number of hours that the pharmacist is on duty, Mr. Potts said that he fully admitted that the public must be taken into consideration, but maintained that they can be educated, and very readily, to acquiesce in this movement if concerted action be taken by druggists.

Mr. Potts further remarked that in his opinion there is only one possible plan to adopt and that is to agitate this question on every favorable opportunity. He said that since the agitation begun last fall by the Philadelphia College of Pharmacy, a great many retailers have closed their stores on Sunday afternoons, and in conversation with some of them he was informed that they like the plan so well that they could not be induced to return to the old conditions.

R. W. Cuthbert, chairman of the committee appointed by the college to help forward the shorter-hour movement, reported that he was encouraged by the results that had already been attained.

Florence Yaple, *Secretary pro tem.*

PROCTER MONUMENT FUND.

GENEROUS SUBSCRIPTION.

Just as we are going to press Professor Remington informs us that Mr. John Wyeth, a graduate of the Philadelphia College of Pharmacy, of the class of 1854, has, for himself, his firm and his brother, subscribed the sum of $2,000 to the Procter Monument Fund.

Mr. Wyeth has a warm appreciation of the services of Professor William Procter, not only to the cause of education, but to everything which tended to the advancement of pharmacy, particularly his researches on percolation and fluidextracts. It is confidently hoped that Mr. Wyeth's example will be followed by others who have equally profited by the labors of the Father of American Pharmacy.

THE NEW FOOD AND DRUGS LABORATORY.

The Philadelphia College of Pharmacy is about to erect a new laboratory, designed to give instruction in analytical chemistry, technical microscopy, and other branches of science, especially adapted for students who desire to fit themselves for chemists under the Food and Drugs Act.

The College purchased a property a number of years ago, upon which a school-house had been erected in 1825 for the Aimwell School Association. This historic building will be entirely demolished and a new laboratory erected covering the whole lot, 40 x 60 feet. Plans are being prepared and it is fully expected that it will be ready for occupancy in the early fall. A roster is being drawn up for the courses for the students in the Food and Drug Laboratory, which will be available shortly.

The College has had in contemplation for a number of years a plan for extending the instruction in this department, and the passage of the Food and Drugs Act has caused such a demand for chemists, that immediate steps have been taken to put the plans in execution.

THE AMERICAN
JOURNAL OF PHARMACY

APRIL, 1907.

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THE DETERMINATION OF ACETANILID AND PHENACETIN IN PHARMACEUTICAL PREPARATIONS.

By Joseph L. Turner and Charles E. Vanderkleed.

Although pharmaceutical literature abounds in methods for the qualitative detection of acetanilid and phenacetin and for distinguishing one from the other, a search has failed to reveal any methods for their quantitative determination save the one given by Puckner (Proceedings of A. Ph. A., Vol. 53 [1905], p. 289), which, however, can be successfully applied only to mixtures containing, besides acetanilid, inorganic salts and alkaloids. This method at once becomes unreliable whenever the composition of the mixture is rendered more complex by the presence of other organic constituents.

The necessity, therefore, for a method which will permit of the estimation of acetanilid, or phenacetin, in a mixture, no matter how complicated it may be, is self-evident, especially in view of that provision of the Food and Drugs Act of June 30, 1906, which requires an accurate statement on the label of the amount of acetanilid or phenacetin present in a preparation.

For the estimation of acetanilid, taken as such, two methods are possible:—

I. Saponification of the acetanilid by means of an alkali; distillation of the resulting anilin from an alkaline solution; acidulation of the distillate with hydrochloric acid; diazotization by means of sodium nitrite at low temperature; and finally, combination with beta-naphtol-alpha-disulphonic acid.[1] The amount of azo-dye thus formed can be estimated by colorimetric comparison with a solution of the same dye prepared from a known quantity of freshly distilled anilin.[1]

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[1] Reverdin and Harpe, *Berichte*, 22, 1004.

II. Saponification of the acetanilid by means of an alkali; distillation of acetic acid from the resulting acetate, from an acid solution; and titration of the distillate.

It can readily be seen that Method I. is too elaborate for practical purposes, and the necessity for using a colorimetric method at the end renders it unreliable to a certain degree. Moreover, the difficulty of the operation of diazotizing, for which too much skill cannot be acquired, renders the method unavailable to the ordinary analyst. There remains, therefore, only Method II. for convenient use in an analytical laboratory.

The method for estimating acetic acid in acetates by means of distillation of the solution acidified with phosphoric acid was originally recommended by Fresenius.[2] Some years later Erdmann and Schultz,[3] followed soon after by Buchka and Erk,[4] and by Schall,[5] applied this method, though in form of a less successful modification (acidulation with sulphuric acid), to the estimation of acetic acid split off from acetylized products by means of saponification. Herzig,[6] shortly after the publication of Erdmann and Schultz's work, made use of phosphoric acid in this process, which thus received erroneously the name of "Herzig's Method."[7]

As applied by the authors to acetanilid, the method can be worked as follows:—

One gramme of acetanilid is saponified by heating to boiling, under a reflex condenser, for one and a half to two hours with 3 grammes sodium hydroxide, 20 c.c. alcohol, and 10 c.c. water. The solution is then transferred to an evaporating dish and the alcohol is evaporated off on the water-bath. The residue is transferred to a separator and shaken out once with ether in order to remove the anilin split off from the acetanilid. The ethereal solution is shaken out twice with water in order to recover traces of sodium acetate, which is somewhat soluble in ether, and the washings united with the original aqueous residue.

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[1] Bucherer and Schwalbe, *Berichte*, 39, 2798.

[2] *Zeitschrift für Analytische Chemie*, 5 (1866), 315.

[3] Liebig's *Annalen der Chemie und Pharmacie*, 216 (1882), 232.

[4] *Berichte*, 18 (1885), 1139.

[5] *Berichte*, 22 (1889), 1561.

[6] *Monatshefte für Chemie*, 5 (1884), 90.

[7] H. A. Michael, *Berichte*, 27 (1894), 2687. Ciamician, *Berichte*, 28 (1895), 1395.

The water solution is then transferred to a flask of 1 litre capacity, acidified with about 25 c.c. of 85 per cent. phosphoric acid, and the acetic acid is distilled off with steam. (It is advisable to connect the flask with the condenser by means of a Kjeldahl's connecting bulb tube, so as to prevent the carrying over of phosphoric acid into the distillate.) The distillation is interrupted when the distillate no longer reacts acid to litmus. Usually about two hours are required, and from 800 to 1000 c.c. of distillate will have been collected before this point is reached.

The distillate is then titrated against sodium hydroxide, using phenolphtalein as indicator. We have found it best to titrate against N/1 sodium hydroxide with the addition of 1 c.c. of 1 per cent. solution of phenolphtalein. In spite of the large amount of liquid, the end-reaction is distinctive under these conditions to within 0·025 c.c. of N/1 sodium hydroxide.

One cubic centimeter of N/1 sodium hydroxide is equivalent to 0·13409 gramme acetanilid.

The following results were obtained, working on pure acetanilid:—

I. Acetanilid taken, 1·00 gramme; amount found, 0·9953 gramme.
II. Acetanilid taken, 1·00 gramme; amount found, 0·9972 gramme.

In order to determine the general applicability of this method to miscellaneous pharmaceutical preparations, the three following mixtures were analyzed for acetanilid:

I.—AN ELIXIR CONTAINING IN ADDITION TO 35 PER CENT. OF ALCOHOL AND 0·947 GRAMME OF ACETANILID IN 100 C.C., THE FOLLOWING INGREDIENTS:—

Extract of Indian Cannabis,
Caffeine,
Sodium Bicarbonate,
Sodium Salicylate,
Monobromated Camphor,
Extract of Hyoscyamus,
Fluid Extract of Gelsemium,
Fluid Extract of Celery Seed,
Aromatic Spirits of Ammonia.

In order to prepare the acetanilid content of this mixture for the saponification, the following procedure was adopted:

Of the elixir 150 c.c. were evaporated on the water-bath at a low temperature to remove all alcohol. The residue was shaken out four times with chloroform and the completeness of the extraction of acetanilid was checked by means of the iso-nitrile test. The united chloroform solutions were evaporated to a small volume in an Erlenmeyer flask on the water-bath, taking care that no active ebullition occurred during the process of concentration. The last portions of chloroform were driven off by means of repeated addition and distillation of small portions of ether. (The complete removal of chloroform is necessary in order to avoid the production of the disagreeable odor of phenyl isocyanide during the next step of saponification.) The resulting impure acetanilid was then saponified and the product of the reaction treated further, as per the process given above.

The results obtained were as follows:

I. Acetanilid present, 1·4205 gramme; amount found, 1·470 gramme.
II. Acetanilid present, 1·4205 gramme; amount found, 1·425 gramme.

II.—A MIXTURE OF ACETANILID AND SALOL.

This is a mixture very much used in medicine, and the determination of acetanilid in it is of special interest in that it so well shows the general practicability of the method proposed by us. The difficulty which here presents itself lies in the fact that while saponifying the acetanilid, the salol is also saponified, and when the mixture is acidified with phosphoric acid and distilled, phenol comes over together with acid, and may interfere with the titration. We therefore used the following modification of the method outlined above:

After the saponified mixture was acidulated with phosphoric acid, it was shaken out once with ether. All phenol was thus removed, but in order to avoid loss of acetic acid, the ethereal solution was shaken out three times with water, and the washings united with the original acid solution. The distillation with steam was then conducted in the usual way, and the distillate titrated.

The following results were obtained:

I. Amount taken, acetanilid 1·0 gramme and salol 1·0 gramme; acetanilid found, 1·003 grammes.

II. Amount taken, acetanilid 1·0 gramme and salol 1·0 gramme; acetanilid found, 0·9985 gramme.

III.—A MOIST ANTISEPTIC GAUZE, CONTAINING ACETANILID, ZINC SULPHO-CARBOLATE, POWDERED ALUM, BORIC ACID, THYMOL, MENTHOL, EUCALYPTOL, AND FORMALDEHYDE.

The gauze had been prepared by saturating the cloth with a hot aqueous solution of the above ingredients, and as it was an impossibility for the cloth to take up all of the solution, the reliability of the results obtained on analyzing the preparation can be judged only by the closely concordant figures obtained by the two slightly different methods pursued.

One yard of the gauze was divided into two parts. The first part, which weighed 51·35 grammes, was exhausted completely in a Soxhlet apparatus with chloroform, and the chloroform solution was treated as in the method for the analysis of the elixir given above. The second part, which weighed 48·5 grammes, was extracted in a Soxhlet apparatus with alcohol, as it was supposed that the chloroform might not have been able to penetrate the moist gauze sufficiently well to extract all of the acetanilid. The alcohol solution was then carefully evaporated, the residue was taken up with water and the aqueous solution was shaken out with chloroform, after which the usual method of procedure was pursued.

The results obtained were as follows:

I. Weight of gauze taken, 51·35 grammes; acetanilid found, 0·93863 gramme = 1·828 per cent.

II. Weight of gauze taken, 48·5 grammes; acetanilid found, 0·89840 gramme = 1·852 per cent.

Conclusion.—The method can be applied to the most complicated pharmaceutical mixtures, it being necessary, in general, only to extract the mixture with chloroform or alcohol in order to obtain the acetanilid in a state of sufficient purity for the saponification. If, after saponification, and on acidulation with phosphoric acid, volatile acids other than acetic acid obtained from the acetanilid are present, means must be taken to remove them before carrying out the distillation, as for example, the removal of phenol by means of ether.

As phenacetin is closely related, chemically, to acetanilid, all that has been said with regard to the latter applies equally well to the former. For that reason we did not deem it necessary to verify the general applicability of our method to preparations containing phenacetin. (One cubic centimeter of N / 1 sodium hydroxide is equivalent to 0·17779 gramme phenacetin.)

The simultaneous presence of acetanilid and phenacetin, as well as other acetylized compounds, in the same preparation would, of course, prevent the use of this method. The authors, however, are engaged in working out a method for the quantitative separation of acetanilid or phenacetin from other acetylized compounds in pharmaceutical preparations, the results of which will be contributed in a later communication.

Other interferences which should be mentioned are acetates, nitrates, and nitrites. These salts, if present in the mixture to be analyzed, would be left behind by means of the chloroform extraction, but their presence in the phosphoric acid or in the alkali used for saponification must be guarded against. The presence of chlorides does not interfere with the results of analysis, as the phosphoric acid cannot liberate the hydrochloric acid from its salts, and in this particular lies the advantage of phosphoric acid over the sulphuric acid used by Erdmann and Schultz.

Finally, if carbonate be present in the alkali used for saponification, the carbon dioxide formed on addition of phosphoric acid must be guarded against, as it would be distilled over with the acetic acid and vitiate the result of the titration. To this end, it is advisable to heat the acidified solution to boiling for a short time, under a well-cooled reflux condenser, before the distillation with steam, in order to drive off the carbonic acid gas.

All stoppers and connections must be of rubber, as cork absorbs acetic acid.

RESEARCH LABORATORY OF THE
H. K. MULFORD CO.

SOME NOTES ON OPIUM FROM THE COMMERCIAL STANDPOINT.

BY C. M. KLINE.

For the benefit of those not very familiar with opium the writer offers this preliminary paragraph. Opium is produced by many countries in the East and differs largely in its appearance, odor and strength according to the country or district in which it is produced, both on account of natural causes and differences in the methods of handling. The names applied to opium in this way are almost innumerable and many appearing on brokers' lists have become so garbled as to be scarcely recognizable. In practically all cases, however, they may be traced to the villages or towns from which that particular variety hails, and by consulting the map all may be gathered under one or another of the main geographical groups. When once so gathered they are often again arranged according to their quality as determined by their appearance and assay. Under the main divisions we have Turkey opium, including the opium of Asia Minor and European Turkey, Persian opium, East India opium, Egyptian opium, and Chinese opium. Occasionally we hear of opiums produced in small quantities in other countries that have little or no commercial importance; Bulgarian, Zambesi or Mozambique are types of such opiums. As Turkey opium is of the greatest importance in the United States we will consider this first.

TURKEY OPIUM.

The opium produced in Turkey is the most important commercially, and is beyond all comparison the most widely known in the markets of the world. This opium is the kind generally understood as meant when opium for use in medicine is mentioned, and any other kind should be used only after careful consideration. In fact many pharmacopœias recognize only that opium collected in Asia Minor. Turkey opium is marketed through three important ports, Smyrna, Constantinople, and Salonica. Of these three great markets, Smyrna is most important and is said to handle five-eighths of the total output, and to fix the price for all the markets of Turkey. The principal commercial varieties are as follows:—

Boghaditz, derived from the district of that name, lying north of Smyrna, between that place and Constantinople. It is the richest opium obtainable in Asia Minor, so far as the morphine content is concerned. It is expensive and seldom shipped to America. It is very gummy and on that account the morphine is difficult to extract in assaying.

Yerli. This name when translated means "surrounding" and is used to indicate all that opium from the districts surrounding

Smyrna, except Boghaditz. It produces an opium rich in morphine, but not sightly. It is very soft and poor in appearance. It is the quality most in demand for the manufacture of morphine.

Karahissar. This grade is derived from the territory lying next beyond the district known as Yerli and further away from Smyrna. It covers practically all the interior of Asia Minor with the town of Karahissar as its centre. The opium is generally sightly, some more so, some less. The poorer grades are shipped as jobbing opium (Adet). The better grades are particularly sightly and are shipped only on special orders, as they cost somewhat more. The higher grades from that district are also known as "Selected Karahissar," and run as a rule as high in test as the Yerli opium and are mostly bought for mixing with the Yerli for manufacturing purposes. The morphine content is said to average about 11·5 to 12 per cent.

Adet. This word as used means "common." It is the opium sometimes called "Jobbing Opium" and originally described the opium of inferior grades from all districts. The quality of this grade, however, has become so poor that in modern practice it is often necessary to mix it with a better quality opium before it can be placed upon the market.

Salonica opium includes all opium produced in European Turkey, and marketed through the port of Salonica. Formerly it was of very fine quality, some assaying as high as 14 per cent., and not much of it was produced. Of later years it has grown in importance, until now Salonica markets about one-third of the total opium in Turkey. The quality is somewhat poor, some shipments are said to test as low as 10 per cent. The finer, softer grades are often shipped to this country and, without being assayed, are inspected while in bond by merchants of Cuba and the South American ports, who select from the cases those lumps of the best appearance and re-ship them to their native lands to be used in smoking. For this opium they are willing to pay a high price. The residues are then utilized in the regular channels.

Tokat and Malatia opiums are produced in the districts by that name located in Armenia on the southeast side of the Black Sea. Of the two, Tokat is the most plentiful and the best known. They are sold in the Constantinople markets for export to Cuba, West Indies, Central and South America. They are largely of a light color, fine, smooth texture and used for the most part for smoking. The morphine content is stated to vary from 7 per cent. all the way to 14 per cent. This opium sells from 2 shillings to 3 shillings 6 pence per pound higher than Smyrna opium and is largely known as "selected shipping opium for smoking purposes."

Turkey opium is generally marketed in the form of rounded masses, which according to their softness become more or less flattened or many sided or irregular, by mutual pressure in the cases in which they are packed. The lumps vary greatly in weight, but the majority are between one-half to two pounds. The exterior is covered with the remains of poppy leaves strewn over with rumex chaff and fruit. This is done to prevent the lumps from adhering, and, as far as we know, is practised only on Turkey opium. The interior is coarsely granular, varying in color from light chestnut to blakish brown. In general it may be said that light-colored, soft, gummy opium is fine quality and will assay high in morphine, while hard, dark opium, unless this condition is the result of years of keeping, will assay low in morphine.

A term which is very frequently read in connection with opium is "Talle-Qualle," in some such way as "Superior Talle-Qualle Opium." This term means, "as it runs," the understanding being that the purchaser is obliged to take the opium as tendered by the seller with the exception only that he may discard that which is not natural opium at the examination. Another term is "Visited Opium." This expression means that any part of the opium not up to the full test may be rejected.

When an opium that is quite fresh is purchased in the markets of Turkey, it is customary for the brokers to demand an allowance for the amount of moisture in the opium, and they in turn expose the balls until such time as the opium has attained the necessary firmness, when it is ready for shipment. The charge for drying opium in Smyrna is 2 pence per pound and the loss in weight is approximately 23 per cent.

PERSIAN OPIUM.

Persian opium occasionally appears in the United States, largely for use in manufacturing, though it is also prized for smoking purposes. When the crop is small and the price is high, Persian opium finds its way only to the Chinese markets. If, however, the crop is large and the price, therefore, somewhat more reasonable, some Persian opium finds its way into the London markets and through this channel often to America. It is usually found in hard blocks, brittle and free from leaves without any rumex chaff. Each separate block is wrapped in paper, generally red, though sometimes yellow. It is very high in morphine, smooth, running from 12 to 14 per cent.

EGYPTIAN OPIUM.

Egyptian opium is only produced in small quantity, though occasionally a few cases appear in the London markets. It is very low in morphine content, assaying only from 6 to 7 per cent., and is of a dark color.

INDIA OPIUM.

India opium is marketed almost entirely in China and is never seen in Western markets. It also contains a very small amount of morphine and is said to assay only about 7 per cent.

The United States Customs demand that opium to enter the country shall assay 9 per cent. or over. The various grades differ so largely in their texture and their content of gummy matter that it is often difficult to obtain anything like accurate results in assaying, particularly when a sample is submitted which is of a different quality than that customarily handled by the individual engaged in the assay. Often much trouble has been caused the broker through the fact that the individual peculiarities of the various analysts figure so largely in the results obtained. One house of which we have heard, because of some new improvements in their assaying process, obtain results regularly 2 per cent. lower than the Government assay made in Smyrna and guaranteed under that strength.

Contribution from the Research Laboratories
of Smith, Kline & French Company.

SOME WELL KNOWN SYNTHETIC CHEMICALS AND THEIR RELATION TO THE PURE FOOD AND DRUGS ACT.[1]

By Lyman F. Kebler,
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The word "synthetic," as used in the chemical world, means a combination of separate substances, elements, or radicals, which result in the formation of definite chemicals. The manufacture of acetanilide from benzol, or antipyrine from aniline, affords good illustrations, inasmuch as in the manufacture of both several operations are necessary. The word "synthetic," however, has acquired an entirely different meaning which has been used to a considerable extent in the past, usually in an honorable manner, but often for the purpose of deceiving not only the public, but also the doctor as well. This feature has been claiming recognition in no unmistakable terms during the past few months. It is held by some that the mixing together of the various cinchona alkaloidal salts, in proportion as found by analysis of the cinchona barks, the same dissolved in simple elixir and colored with caramel, is a "synthetic elixir of cinchona bark." Other illustrations are the common headache mixtures, which consisted in the past, and at present to a lesser extent, chiefly of acetanilide, sodium bicarbonate, or ammonium carbonate, and caffeine. These mixtures are at times so named as to lead to the belief that they are synthetic chemicals. In some cases even a hypothetical chemical name, together with a structural formula, are attached to make the deception even more complete. Since the passage of the act, the acetanilide has been replaced in many instances by para acetphenetidin (commonly known as phenacetine) and antipyrine. This subject will be considered in a subsequent portion of this paper. It is also claimed that a so-called "raspberry extract" made up with various esters dissolved in alcohol (grain or wood) and colored with cudbear is a "synthetic raspberry extract." There are undoubtedly different views as to whether or not the latter claims are justifiable, but in the speaker's opinion, the first definition, or a similar one, is the only one that should receive any recognition in the chemical world. As a matter of fact, the latter is simply used to attract the attention of the public and has no basis for existence whatever.

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[1] Delivered before the Franklin Institute, Philadelphia, January 10, 1907.

The Pure Food and Drugs Act specifies that an article is misbranded if it fails to bear a statement on the label of the package "of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any such substances contained therein." The act also forbids the use of any poisonous or deleterious ingredient in the manufacture of food products, or any agent which misleads or deceives in any particular. The two phases of the act just considered require, first, that the presence of certain habit-forming drugs shall be declared on the label, and second, no injurious agent or agents which deceive in any particular shall be used in the manufacture of food products.

It can readily be seen by chemists familiar with the ingredients enumerated in the act that the phrase "derivative and preparation of same" is very comprehensive, which was undoubtedly the intention of Congress. This clause was undoubtedly introduced for the purpose of preventing or evading prosecutions under the law on pure technicalities. For example, it has been held by the defendant in a number of cases where a prosecution was brought, on the ground that a product contained the forbidden ingredient, morphine, that the ingredient present in the product under consideration was not morphine, but morphine sulphate. The same position has been taken in other cases; for example, it is contended by some manufacturers that the introduction of cocaine through the medium of an extract of coca leaves, or by extracting coca leaves directly with the menstruum of the article, cannot be considered a cocaine preparation any more than could coffee be construed as a caffeine product. It is immaterial how cocaine is introduced into a product; the fact of its presence renders such a product a cocaine preparation. Any other conclusion must be based on a technicality or is a mere quibble.

So far as the word "preparation" is concerned, as used in the act, there does not appear to be any question relative to its meaning, but this is not the case with the word "derivative." The term "derived from," as used in the tariff law of 1897, has not only been subject to decisions at the hands of the Appraiser of the United States Customs Service, but has also been defined by the United States Federal Court (1899 Federal Reporter, 719) and the United States Court of Appeals (1902 Federal Reporter, 603). The decisions arrived at are that the words "derive," "derivation," "derivative," must be interpreted as "made of," "prepared from," "produced from," "obtained from," and that the term "derived from" has its ordinary meaning of "produced from" and relates to the physical substance from which such product is obtained and *not to its chemical relationship.* In other words, if the manufacturer starts with alizarine and by partial replacement produces a dye, such dye is derived from alizarine, but not otherwise. The question under consideration in the above decisions was whether or not certain dyes were derived from alizarine. These precedents must undoubtedly be taken into consideration in connection with the recently enacted pure food and drug law, but the aims and objects of the latter are entirely different from those of the tariff law.

The meaning of the term "derivative," as used in the act, has been called into question because (para) acetphenetidin is classed as a derivative of acetanilide. There is no question but that (para) acetphenetidine is a derivative of acetanilide, both chemically and physiologically, and resembles it in its tendency to habit formation, physiological action, and physical properties. Furthermore, Treasury decision 13,270 construes this chemical as an alcoholic medicinal preparation. The exact status of this product under the law therefore appears to be in a somewhat unsettled condition at present.

In this paper only a few of the synthetic chemicals that are affected by the Federal law will be considered. For the purpose of ready reference, it is deemed desirable to collect them into the following groups:

(1) ALCOHOL GROUP.

Common Names.	Synonyms and Chemical Names.
Ether	Sulphuric ether, ethyl ether.
Ethyl acetate	Acetic ether.
Ethyl nitrite	
Ethyl bromide	Monobromethane.

(2) CHLOROFORM AND CHLORAL HYDRATE GROUP.

Chloroform	Trichlormethane.
Chloral hydrate	Trichlorethidene glycol.
Chlorotone	Aneson; Acetone chloroform; Trichlorpseudobutyl-alcohol.
Chloral alcoholate	Trichlorethidene ethyl alcoholate.

(3) COCAINE GROUP.

Alpha Eucaine	Benzoyl-Methyl-tetra-Methyl-gamma-oxy-piperidin-carboxylic-Methyl ester.
Beta Eucaine	Benzoyl-vinyl-diacetonalkamin hydrochloride.

(4) OPIUM-MORPHINE GROUP.

Heroin	Diacetyl morphine.
Dionine	Ethyl morphine hydrochloride.
Peronine	Benzylmorphine hydrochloride.
Codeine	Methyl morphine.

(5) ACETANILIDE GROUP.

Acetanilide	Phenylacetamide; Antifebrine.
Phenacetine	Para-acet-phenetidin; Acetphenetidin; Para-acetamido-phenetol; Para-oxyethyl-acetanilide.
Antipyrine	Analgesin; Anodynine; Parodyn; Phenazon; Phenyl-dimethyl-pyrazolon; Pyrazine.

(6) PRESERVATIVE, SWEETENING AND FLAVORING GROUP.

Salicylic acid	Ortho-oxy-benzoic acid.
Benzoic acid	
Vanillin	Methyl-protocatechuic aldehyde.
Saccharin	Benzosulphinide.

In the above groups it will be noticed that not only are the common names employed, but also the synonyms and structural formula names. The object of giving the latter is simply to call attention to the fact that manufacturers are making frequent requests to be permitted to use some other words than those specifically enumerated in the act; for example, one manufacturer represents that a setting forth on a label of the fact that his product contains opium would be a financial loss and asks whether it would not be satisfactory to state on the label that this product contains a certain amount of Papaver somniferum. Other manufacturers request that they be permitted to use the word phenylacetamide, or the phrase "the monacetyl derivative of aniline," or the structural formula in place of the word acetanilide. If it were permitted to use other words than those given in the act for the ingredients specifically covered, there would soon be such a confusion of names and structural formulæ that it would be necessary to consult an expert organic chemist to decipher same.

It is held by some writers that it was absolutely unwarranted to include some of the chemicals and products enumerated in the rules and regulations, because in many cases such articles are never used as habit-producing drugs. In this connection it should be stated that this question was submitted to about twelve of the best pharmaceutical chemists, manufacturing and analytical, and while a few think that the public would be protected just as well without requiring a declaration on the label of the presence of certain ones, yet on the whole every one heard from thus far suggested additional products to be included. In other words the suggestions of these men indicate that instead of having included too many drugs, the list should be augmented. Our general correspondence confirms this attitude. It should furthermore be noted that it seems necessary to include certain chemicals in order to avoid technicalities; for example, it is held by one chemist that a certain chemical could not be considered a derivative of alcohol because ethyl bromide is not enumerated as a derivative of alcohol in the regulations, and inasmuch as this chemical is employed directly in introducing the ethyl group into the product, it is necessary that this product be included as a derivative of alcohol. The contention that certain ingredients are not used as habit-producing drugs is not well taken. This claim is made for ether, which, as a matter of fact, however, is used to fortify beverages in order to render intoxication more rapid and complete; particularly is this the case where parties are addicted to the alcohol habit and the ordinary beverage does not appear to satisfy the appetite of the consumer.

The morphine group presents some interesting features. It is well known that morphine and opium, and the disastrous results of same, have been widely exploited during the past few years, not only in the lay journals but also to some extent in the public press. Many manufacturers deem it expedient to remove these words from their labels if possible because of this unfavorable notoriety. The result is that these ingredients have, in many instances, been replaced with other products which are not so well known to the public; for example, heroin, codeine and dionine have replaced morphine in a considerable number of cases. These chemicals are at present supposed not to produce as deleterious results on the human system as do opium and morphine even when used over extended periods, but what the future will bring forth by their promiscuous and indiscriminate use, is difficult at present even to conjecture. It is even now reported that where narcotic laws prohibit the indiscriminate sale of morphine and no restrictions whatever are placed upon the sale of codeine, that the latter product is being used in place of the former.

What has been said above in connection with the opium-morphine group applies equally to the acetanilide group. At the time the Pure Food and Drugs Act was passed there were approximately 500 headache and laxative preparations sold through the jobbing trade under various names which contained acetanilide. It is a significant fact that the acetanilide in many of these preparations has been replaced by acetphenetidin (phenacetine), and we are also informed, from various sections of the country, that antipyrine is being employed for the same purpose. Exactly why some of these changes have been made is not clearly apparent, because none of the substitutes are as cheap as acetanilide; although the price of each has been materially reduced within the past few years. This is due largely to the fact that the patents covering these chemicals have lapsed, and the price has fallen in the case of acetphenetidin (phenacetine) from $16 to $1 per pound, and antipyrine from about $22 to $2.40 per pound, both in bulk. The price of acetanilide in quantity at this writing is 25 cents per pound. Another probable reason for replacing acetanilide by acetphenetidin is because the latter is supposed to have a less deleterious effect upon the human system than the former, but this is at present an open question. No one has thus far ventured to give this as an excuse for using antipyrine, because it is a well known fact that the latter is the most dangerous of these three medicinal agents. Two other potent factors, however, should be considered in this connection. These are: (first), that the deleterious effects of neither acetphenetidin nor antipyrine have been given any publicity, and the public therefore has little knowledge of the meaning of the words acetphenetidin and antipyrine, should their presence be declared upon the label; (second), it was expected that both of these chemicals could be used indiscriminately in medicines without the necessity of declaring their presence upon the label. Acetphenetidin, however, according to the rules and regulations made under the Pure Food and Drugs Act, must be set forth on the label.

The use of harmful preservatives in food products is forbidden. The exact status of the harmful nature of certain preservatives is at present not definitely settled. Among the most conspicuous preservatives used during recent years are the synthetic chemicals known as salicylic acid and benzoic acid and their salts. The experimental results obtained in the Bureau of Chemistry in connection with salicylic acid and the salicylates have just been published in Bulletin 34, Part 2, from which part of the general conclusions are herewith quoted:

"There has been a general consensus of opinion among scientific men, including the medical profession, that salicylic acid and its compounds are very harmful, and the prejudice against this particular form of preservative is perhaps greater than against any other material used for preserving foods. This is due not only to the belief in the injurious character of salicylic acid, but perhaps is especially due to the fact that it has in the past been so generally used as an antiseptic. That salicylic acid should be singled out especially for condemnation among preservatives does not seem to be justified by the data which are presented and discussed in this bulletin. That it is a harmful substance, however, seems to be well established by the data taken as a whole, but it appears to be a harmful substance of less virulence than has been generally supposed. The addition of salicylic acid and salicylates to foods is therefore a process which is reprehensible in every respect, and leads to injury to the consumer, which, though in many cases not easily measured, must finally be productive of great harm."

Benzoic acid and the benzoates are by many considered less harmful than the salicylates. Whether or not this is correct remains to be established by future experiments and observations. This much, however, is certain, that whenever it is possible, and usually it is, food products should be prepared without the use of any questionable preservative.

Saccharin is generally employed as a sweetening agent and its use is largely of a deceptive character because the consumer usually believes that when he is eating a food product sweetened with this chemical, that the sweetening is due to some form of sugar. The use of saccharin as a sweetening agent is not only common in food products, but also in medical remedies. Saccharin is a most valuable agent for certain diseased conditions, but this does not justify its indiscriminate use. Inasmuch as deceptions and misrepresentations of all kinds are prohibited under the act, the presence of this chemical should be declared upon the label.

The synthetic production of vanillin undoubtedly was one of the greatest scientific achievements and triumphs of chemistry. Vanillin is a very valuable commodity. It is claimed by many that flavoring preparations made with vanillin as a basis, possess distinct advantages over extracts from the vanilla bean. There is no question whatever but that vanillin possesses certain merits not inherent in the vanilla bean, and it seems rather incomprehensible why manufac turers do not take advantage of this fact and sell vanillin preparations on their merits. Let not vanillin in disguise deprive extract of vanilla of its time-honored reputation.

THE CHEMISTRY OF THE PROTEINS AND THEIR RELATION TO BIOLOGY.[1]

BY EMIL FISCHER.

It is not surprising that substances of such eminent importance as the foodstuffs have long been the subjects of scientific investigation, when it is remembered that the great majority of the people pay out more than one-half of their incomes in purchasing them. Physiology, chemistry, botany, and medicine strive to establish their value, their composition, their formation in the plant world, and their fate in the animal kingdom. Generally speaking, foodstuffs show great similarity in chemical composition, though differing widely in outward form, in color, taste, and smell; for the great majority consist of complicated compounds of carbon, or so-called organic substances, built up by remarkable synthetic processes in plants from very simple materials—namely, water, carbon dioxide, nitrates, and a few other salts found in the earth. These products then undergo manifold changes in the animal body—sometimes a radical decomposition previous to being used for the building up of the organs, and, finally, they are reconverted into the materials from which they were made—namely, carbon dioxide, water, etc. For the correct interpretation of these changes it is necessary to acquire an accurate knowledge of the chemical nature of each individual substance, which occurs at any time during the cycle, and this is the problem which, for the last one hundred years, organic chemistry has tried to solve—always with increasing success.

THREE GROUPS OF FOODSTUFFS.

The large number of organic compounds which have in this way to be considered may be fairly sharply divided into three classes—the fats, the carbohydrates, and the proteins, as, apart from water, they form the major portion of our nutriment. Their composition was proved, qualitatively, in the eighteenth century by Lavoisier, and, quantitatively, with fair accuracy, in the beginning of the nineteenth century. But of much more importance and of greater difficulty to ascertain is their constitution, or the structure of their molecules, and in this respect our knowledge of the three classes differs widely. The nature of fats was essentially proved by the researches of Chevreul on the preparations of soaps in the first decade of the nineteenth century; and in 1854, or twenty-six years after the commencement of organic synthesis, Berthelot showed that it was possible to prepare the fats from glycerol and the fatty acids. Whereas it was not until 1890 that grape sugar—the most important member of the carbohydrate group—was artificially prepared, and the more complicated members—starch and cellulose—have not even now been synthesized, and, moreover, the size of their molecules is doubtful. Still more imperfect is our knowledge of the proteins (albuminoids), which differ from the fats and carbohydrates in containing nitrogen, and are, together with their numerous derivatives, the most complicated chemical substances which Nature produces. Typical of them is casein—obtainable in a variety of ways from milk and the white of egg—which is not, as generally supposed, an individual substance, but consists of at least two proteins resembling one another very closely. The property possessed by egg albumin of coagulating when heated is common to a large number of proteins. Blood is, however, richer in these substances than other animal secretions, containing four different classes, to which belong fibrin and globin. Two other proteins worthy of special mention on account of their simple chemical composition are (*a*) the protamines—of which the first representative was isolated by Miescher in 1874 from salmon spawn—and (*b*) fibroin, the principal constituent of silk, which, according to the author's experience, is the easiest of all proteins to study.

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[1] Abstract of a lecture delivered before the Royal Prussian Academy of Sciences; reprinted from *Pharm. Jour.*, March 2, 1907, p. 261.

STRUCTURE OF THE PROTEINS.

As in the other chapters of organic chemistry, two methods are available for determining the structure of the molecules of the proteins—synthesis and analysis—and in connection with the latter, the only process which has given direct evidence is "hydrolysis," whereby there are first formed easily soluble products known as albumoses and peptones, which then further break down into amino acids. Such changes occur during digestion, and can be more rapidly brought about, artificially, by the action of strong acids, such as hydrochloric acid, which gives rise almost exclusively to amino acids. Among the more important of these may be mentioned glycocoll, alanine, valine, leucine, and isoleucine, which are the α-amino derivatives of acetic acid and its homologues, containing three, five, and six carbon atoms; phenylalanine, closely related to analine, but containing the phenyl group; serine and tyrosine, the simple hydroxy derivatives of alanine and phenylalanine; aspartic and glutaminic acids; prolin and oxyprolin, derived from the heterocyclic compound pyrrolidine, and which form a sort of bridge between the proteins and the alkaloids; the diamino acids, ornithine, lysine, and arginine; histidine; tryptophan, belonging to the indol group; and cystin, characterized by its high content of sulphur.

It does not follow that all these acids must occur as degradation products of every protein, in which the molecule would be terribly complicated and have a value of 12,000–15,000, or from fifteen to twenty times that of the fats; but all are obtainable from the majority of the proteins, and, as they have been recognized for more than fifty years as the corner-stones of the protein molecule, it is not surprising to find that in most cases the structure is known and a complete synthesis has been effected. With the exception of glycocoll, all of them occurring in nature are optically active, whereas the synthetic products are inactive; but they can be split into optically active forms by the well-known methods of Pasteur.

This work only solves the smallest portion of the problem of the chemical constitution of the proteins, for it is much more difficult to answer the question in which way are the molecules of the amino acids bound together? It would appear that the solution should lie in the investigation of the products of partial hydrolysis of the proteins; but the resulting albumoses and peptones are mixtures of very similar substances, for which there are no known methods of separation. The author has therefore chosen the alternative method of investigation—namely, the synthesis of the proteins from amino acids—and has attempted to thereby produce artificial proteins similar to those occurring in nature.

SYNTHESIS OF "THE POLYPEPTIDES."

Starting with two molecules of glycocoll (glycine), it is seen that condensation can take place between the carboxyl group of one molecule and the amino group of the second molecule, giving rise to a new substance:—

$$\begin{aligned} &NH_2\cdot CH_2\cdot CO\overline{|OH\quad H|}\,NH\cdot CH_2\cdot COOH = \\ &H_2O + NH_2\cdot CH_2\cdot CO\cdot NH\cdot CH_2\cdot COOH \quad (1) \end{aligned}$$

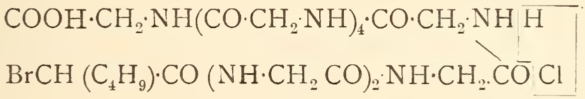
with which the process might be again repeated between the terminal amino group and the carboxyl group of yet another molecule of glycocoll, giving a body

$$NH_2\,CH_2{\cdot}CO{\cdot}NH{\cdot}CH_2{\cdot}CO{\cdot}NH{\cdot}CH_2{\cdot}COOH \quad (2)$$

Such products receive the generic name "polypeptides"; when formed from two molecules of an amino acid they are dipeptides (glycylglycin, 1); from three molecules, tripeptides (diglycyl-glycin, 2), etc. The following may be quoted as illustrating the various methods employed for bringing about this type of reaction. Glycocoll is allowed to interact in aqueous alcoholic solution with the acid chloride of chloracetic acid:—

$$ClCH_2{\cdot}COCl + NH_2{\cdot}CH_2{\cdot}COOH =$$
$$ClCH_2{\cdot}CO{\cdot}NH{\cdot}CH_2\,COOH + HCl$$

and the chloroacetylglycin so formed is treated with aqueous ammonia, when the chlorine atom is replaced by an amino group giving glycylglycin (formula 1). The process then can be repeated to give tri-, tetra-, and pentapeptides; but it becomes tedious for the preparation of very complicated substances, which are obtained by a modification of the process. For example, pentaglycylglycin (3) is allowed to interact with the acid chloride of bromoisocapronyldiglycilglycin (4)



$$(3)\ COOH{\cdot}CH_2{\cdot}NH(CO{\cdot}CH_2{\cdot}NH)_4{\cdot}CO{\cdot}CH_2{\cdot}NH\ H$$
$$(4)\ BrCH\,(C_4H_9){\cdot}CO\,(NH{\cdot}CH_2\,CO)_2{\cdot}NH{\cdot}CH_2{\cdot}CO\ Cl$$

and the bromine atom in this body is then replaced by an amino group, giving leucyl-octaglycyl-glycin.

$$NH_2{\cdot}CH(C_4H_9){\cdot}CO(NH{\cdot}CH_2{\cdot}CO)_8NH{\cdot}CH_2{\cdot}COOH$$

About 100 of these polypetides have been prepared, mostly (on account of expense) derivatives of glycocoll, alanine, and leucine; but when cost and trouble have not to be considered it will be possible to prepare peptides from the most complicated of the amino acids.

IDENTITY OF POLYPEPTIDES WITH PROTEINS.

Some of the polypeptides have proved to be identical with certain degradation products of the peptones, and it is important to notice that they resemble closely in their properties the natural proteins.

For instance, a polypeptide containing the residues of fourteen amino acids (leucyl-triglycyl-leucyl-octaglycyl-glycin) when dissolved in alkalies froths like a solution of soap; it forms very insoluble salts with mineral acids and gives a beautiful biuret reaction. But it does not follow that these synthetic products need be identical with any natural proteins, for, though similar in the structure of their molecules, yet the kind, number, and arrangement of the amino acid residues may be quite different. It will only be possible to say that a natural protein has been synthesized when it has been definitely characterized as a chemical individual and proved to be identical with a synthetic product. This must be the trend of future work; peptones and albumoses must be separated and characterized, and still more complicated peptides built up from them. To attain this end means much laborious work, but the author has no doubt that success is possible. No commercial value is at present attached to the investigation as in the cases of organic syntheses, which have given to the world dye-stuffs, perfumes, synthetic remedies and explosives; the investigation of the proteins has at present the purely scientific aim of giving to biology a clearer insight into the chemical processes of animal and plant life.

THE PROTEINS AND ENZYMES.

The proteins are the material from which the organism builds up its most powerful agents, for as such the ferments or enzymes may be described without exaggeration. These can produce the most varied changes, such as oxidation, reduction, hydrolysis, and condensation, classical examples being found in the digestion of food in the stomach and intestines or in the preparation of alcoholic beverages from juices containing sugar by the action of yeast. The chemical investigation of the enzymes is still in its infancy; all attempts to decide their composition and structure have so far proved in vain; but it is known with certainty that they possess many resemblances to the proteins and are very probably formed from them. The fuller investigation of the proteins must therefore throw further light on the nature of the ferments, and the attempted synthesis of the latter from natural or synthetic proteins would not, even at the present time, be a rash enterprise. On account of the part which they play in the chemical processes of the living organism, ferments and proteins are so closely connected that their investigation must take place hand in hand. Progress will not be rapid, for even when the main methods of attack have been developed it will mean endless individual work; but this will be readily accomplished by science, through the co-operation of numerous voluntary workers and the help obtainable from modern institutions.

"Organic synthesis is not yet eighty years old, for it commenced in 1828, when Wöhler synthesized urea. Will it rule over the province of the natural proteins and ferments on its hundredth birthday? No definite answer can be given, but it is certain that the question will never disappear from the domain of organic chemistry, and its solution would be a powerful advance for general biology, for medicine, and for many economic problems."

A RETROSPECT OF DISCUSSIONS ON THE RENEWAL OF PRESCRIPTIONS.[1]

By John K. Thum, Ph.G.

The renewal of the prescription, like the ownership, has long been a source of much discussion among physicians as well as among pharmacists. Just forty years ago a number of papers, bearing on this subject, appeared in the medical and pharmaceutical journals of this country, and, among others, the East River Medical Association of New York even went so far as to propose legislation to regulate and control the renewal of all prescriptions.

At the sixteenth annual meeting of the American Pharmaceutical Association, held in Philadelphia in September, 1868, the members present discussed a communication from the East River Medical Association of New York, and appointed a committee of five members to draft suitable resolutions regarding the renewal of prescriptions.

In the course of the discussion leading up to the appointing of this committee, Dr. Squibb expressed the opinion that "this Association may pass any rule it pleases in regard to the matter, but it cannot bind common usage. A physician who gives a fluid ounce of syrup of rhubarb, and asks that that prescription shall never be repeated, prescribes to that pharmacist that he shall never sell any more syrup of rhubarb to that person. If the syrup of rhubarb can never be again sold without a written prescription it obstructs the thing entirely. Any article in common use may be excluded from sale by such a regulation as that. I mention this as an extravagant case to show that no such rule as is proposed here ever could be adopted with justice." Dr. Squibb further asserted that it would be a hardship upon the physician to be obliged to write a prescription for every simple remedy, but that, on the other hand, the pharmacist should, and no doubt would, refuse to put up a prescription containing potent or habit-forming drugs, or one that was otherwise injurious in character. In concluding he said: "It is a thing that cannot be laid down by law. It must depend upon the education of the pharmacist, who must be educated to have such judgment as to be able to decide these minor points."

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[1] Abstract of paper read at the meeting of the Philadelphia Branch of the American Pharmaceutical Association, March 5, 1907.

The committee appointed to consider the subject of the renewal of prescriptions subsequently presented a preamble and resolution asserting, among others, that:

"The Association regards the pharmacist as the proper custodian and the owner of the physician's prescription."

"The restriction of the pharmacist to a single dispensing of a prescription, without the written authority of the prescribing physician for its renewal, is neither practicable nor within the province of this Association."

"Nevertheless we regard the indiscriminate renewal of prescriptions, especially when intended for the use of others than those for whom they were prescribed, as neither just to the physician nor to the patient, between whom we stand as conservators of the interest of both, and that such abuses should be discouraged by all proper means."

It is quite evident that the matter of the renewal of prescriptions was considered by these pioneers of American pharmacy from a common-sense point of view. Dr. Squibb brought the question down to its only legitimate solution, that of education and proper training. If teachers in pharmaceutical schools would, at appropriate times, impress upon their students the necessity and value of a cultivation of the moral sense and instill in them a nice sense of honor, the renewal of prescriptions as well as other abuses which are lowering the tone of true pharmacy would correct themselves in short order.

The pharmacist can and should refuse to repeatedly renew a prescription containing potent or habit-forming drugs, and he should also refuse to renew prescriptions that are designed for the treatment of genito-urinary disorders or for the producing of abortion.

In doing so, however, the pharmacist should and must use tact, always remembering that his vocation in life should be to protect the patient, please the physician and make an honest living.

To me the most rational method for controlling the indiscriminate renewal of prescriptions is that described by Mr. Burke, of Detroit, at the Golden Jubilee meeting of the American Pharmaceutical Association in Philadelphia, in 1902. Mr. Burke attaches to all containers of medicines prescribed by physicians a sticker with the following notice:

"Much harm often results from refilling prescriptions. It is always best to obtain the advice of your physician."

The general use of a sticker like this on all prescriptions that should not be renewed without positive orders from the physician, would be a practical step in the right direction. A warning of this kind would make people solicitous for their welfare. They would probably consult their physician and be guided accordingly.

The argument that is sometimes advanced that the physician is not receiving adequate compensation when his prescriptions are renewed without his order is a wrong one, and is repudiated by all physicians of standing. The question obviously should not be allowed to resolve itself into what is best for the physician or the pharmacist, but, rather, what is good for the public at large? The public have rights which we must take into account. Any method that will contribute the greatest good to the greatest number is always the one to be sought for.

AN EFFICIENT PLAN FOR CONTROLLING THE RENEWAL OF PRESCRIPTIONS.[1]

By Franklin M. Apple, Ph.G.

Any one conversant with various complaints that have been and are being made, by members of the medical profession, against pharmacists who promiscuously renew prescriptions, will readily appreciate the need for the evolution of some plan whereby this practice can be controlled with evident fairness to all of the parties concerned.

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[1] Abstract of a paper read before the Philadelphia Branch of the American Pharmaceutical Association, March 5, 1907.

From a careful study of my own prescription files I have come to the conclusion that an ever increasing number of medical men are desirous of limiting the use of their prescriptions to the patient for whom they are written, and, if possible, to the conditions existing at the time the patient was seen.

This tendency on the part of medical men is perhaps best illustrated by the ever increasing number and variety of requests not to refill prescriptions that are to be found, written or printed, on the files of the average pharmacy of to-day.

The printed requests particularly are increasing rapidly, and I may be permitted to cite you just a few of those that have come to my attention recently. They are as follows: "Not to be Renewed." "This prescription not to be refilled unless so ordered," "Note: This prescription is written for the party named above and for this time only. Do not refill without my written order." "Do not renew or copy." "Not to be renewed except upon orders in writing." "This prescription must not be renewed unless countersigned by physician giving it, and under renewed date!" "This prescription is intended for the present indications only, and is not to be renewed without the written consent of the physician."

Believing that any and all injunctions of this kind should be honored, so far as possible, it has been my custom to place upon all containers holding a compounded, restricted prescription the following sticker:—

Your physician directs that this prescription *is not to be renewed* without his consent.

In this connection I would like to call your attention to the first three words, they place the responsibility where it justly belongs and have a wonderful restraining influence over the patients, as many are afraid to have the prescription renewed knowing that their physicians deem it best not to do so.

To further eliminate the imperfections and the injustice to the honest pharmacists, of a bare statement "Not to be renewed," I have devised a plan that I believe to be equitable to all of the parties concerned, viz.: the medical practitioner, the pharmacist, and the patient.

This plan is the use of a prescription blank that would be accepted as bona fide evidence of being a legal contract in that the patient could not disclaim a knowledge of the restrictive clauses of the injunction on the blank.

On the face of this prescription blank, immediately under the physician's name and address, is the following:—

> NOTE.—The conditions under which this prescription is written will be found on the reverse side hereof.

On the reverse, and running across the centre of the prescription, is the following notice:—

> This prescription is written for the party whose name appears thereon, for the present indications only; hence it is *not to be renewed* without my written consent, and *no copy of same is to be given.*
>
> The pharmacist compounding it will kindly preserve same on his prescription file.
>
> Date . . . . Dr. . . . .

The verbiage of the prescription is the weakest that I think prudent to use to meet the case. The medical man who chooses to use such a prescription blank can unquestionably control his prescriptions, but he at the same time assumes the responsibility to his patients for the restrictions; thereby putting him to an honest test if he wishes his prescriptions to be or not to be renewed.

I believe that the pharmacist receiving a prescription from a physician using this form of prescription blank, properly signed would have no alternative but to respect the request or order if he wishes to retain the good will and support of the prescriber.

The pharmacist is further relieved of any necessity of explaining the causes for the limitations placed on the prescription by the prescriber, and the inquiring patient should be referred directly to the author of the prescription for all necessary information.

The public should be protected against possible ignorance of the contents of compounded prescriptions, and the general adoption of a prescription blank of this type would effectually protect the patient from any and all possibilities of becoming unknowingly and unwittingly addicted to the habitual use of a prescription.

The merits of this plan are so manifest that it has been and is being used as the basis of the wonderfully satisfactory work done by the Twenty-second District of New York City. It was offered to their medical men as an evidence of fair play in their propaganda for the more extended and general use of U.S.P. and N.F. preparations.

In conclusion I believe that there is sufficient demand for limiting the renewal of prescriptions, by medical men, to warrant the popularization of some satisfactory and efficient plan for doing so, and I also believe that the plan that I have just described to you is based upon justice, is safe legally, and where it has been tried honestly, has proven to be perfectly satisfactory.

CORRESPONDENCE.

STANDARDS IN PHARMACEUTICAL EDUCATION.

Editor of AMERICAN JOURNAL OF PHARMACY.

DEAR SIR :—I have read with much interest and profit your article in the March issue of the AMERICAN JOURNAL OF PHARMACY.

Permit me to call attention to a sentence on page 102, which reads as follows:

"And so if the youths of the country districts of Iowa, or Kansas, or Missouri have not, as is claimed by some, the opportunity for obtaining a high-school education, is that any reason why those in Ohio, or Michigan, or Pennsylvania should be excused for neglecting theirs?"

I should like to make the statement that Kansas is not willing to have herself classified with any geographical district where opportunities for a high-school education in rural districts are not obtained. There are already in Kansas one hundred and fifty accredited high schools; that is high schools accredited by the University of Kansas. There are seventy-five more high schools that give a two-year high-school course. The Barnes law, passed in 1905, grants public aid for high schools; this has already been made available in forty-three counties of the State, which will lead to the establishing of an estimated number of one hundred more four-year high schools.

Before the Barnes law went into effect, twenty-one counties of the State had already established county high schools. Thus sixty-four out of one hundred and five counties of the State offered free high-school tuition. It is estimated that within two years there will not be a single county in the State that will not offer high-school privileges. There is no reason in the world why the educational standard should be kept low on account of high-school privileges in rural districts in Kansas.

I have noticed with regret the reflections which have been cast upon Kansas from the fact of her having been classified as above stated, and as a loyal Kansan I wish to enter my protest against any such reflections. We are endeavoring here to raise the standard of education as rapidly as possible, and if we should not do this we certainly should not offer the excuse of the lack of high-school privileges of the State.

L. E. SAYRE.

UNIVERSITY OF KANSAS, March 13, 1907.

AMERICAN MEDICAL ASSOCIATION.

REPORT OF THE COUNCIL ON PHARMACY AND CHEMISTRY.

We reprint herewith from *The Journal of the American Medical Association* an installment of the report of the Council on Pharmacy and Chemistry. A list of the new and non-official remedies tentatively approved by the Council was published in the February number of this JOURNAL (p. 67). The first installment of the descriptions of the remedies appeared in the March number (p. 112), and additional installments on some of them will appear from time to time. The importance of these reports is too evident to need comment. For the first time in the history of the organized profession, a scientific commission, whose ability and probity is above suspicion, has reported on preparations regarding which heretofore we have had only the report of those interested, financially and otherwise, in their exploitation.

ACETOZONE.

A mixture of equal parts of benzoylacetyl peroxide and an inert absorbent powder.

Actions and Uses.—Benzoylacetyl peroxide belongs to a class of compounds known as the organic peroxides in which an excess of oxygen has been combined in such a way that it is somewhat slowly given off in a nascent condition. On contact with water it hydrolyzes, forming benzo-peracid and aceto-peracid which exert marked oxidizing and germicidal action. In consequence of this change, these compounds are thought to be particularly adapted for internal administration. The germicidal and antiseptic properties of this substance have been attested by the experimental results of several observers. It has been used in ophthalmic, aural and nasal practice with asserted good effects as an antiseptic. It has also been applied internally, especially in typhoid fever, with a view to the disinfection of the intestinal canal, and appears to be an intestinal antiseptic. Dosage.—Acetozone is generally employed in aqueous solution prepared as follows: Add acetozone to warm water in the proportion of 1 gramme to 1000 c.c. (15 grains to the quart), shake vigorously for five minutes, and allow to stand for about two hours. Decant the liquid as required. This solution may be drunk *ad libitum*, two quarts or more being taken by an adult in twenty-four hours. Acetozone is also used in oily solution as an inhalant. Manufactured by Parke, Davis & Co., Detroit, Mich.

ADNEPHRIN SOLUTION.

A sterile solution of 1–1000 of the suprarenal active principle in physiologic salt solution containing one-half of 1 per cent. of methaform (chlorbutanol).

Actions and Uses.—The actions and uses of this preparation are described under Suprarenal Alkaloid. Dosage.—The dose internally is from 0·2 to 2·0 c.c. (3 to 30 minims) in water. Adnephrin is also used in oily solution as a spray, see Adnephrin Oil Spray, and in the form of ointment, see Adnephrin Emollient. Prepared by F. Stearns & Co., Detroit, Mich.

ADRENALIN.

The active alkaloid of suprarenal gland, prepared by the method of Takamine, see Suprarenal Alkaloid.

Dosage.—Locally, 1–1000 to 1–15000 solution, as the chloride. Internally, 0·3 to 2 c.c. (5 to 30 minims) of 1–1000 solution. Hypodermically, 1 to 15 drops of 1–1000 solution, diluted with sterile water. Manufactured by Parke, Davis & Co., Detroit, Mich.

ADRENALIN CHLORIDE SOLUTION.

Dosage.—See adrenalin. Prepared by Parke, Davis & Co., Detroit, Mich.

ADRENALIN SUPPOSITORIES.

One part of adrenalin to 1000 parts of oil of theobroma (cacao butter). Each suppository weighs about 1 gramme (15 grains). Prepared by Parke, Davis & Co., Detroit, Mich.

AGURIN.

Agurin—$C_7H_7N_4O_2Na + NaC_2H_3O_2$, a double salt of sodium acetate and theobromine-sodium.

Action and Uses—It acts like theobromine, over which it has the advantage of great solubility and that it is well tolerated by the stomach. While inferior in diuretic power to theophyllin (which see), it is said to have greater power in sustaining the diuresis produced. Dosage.—0·5 to 1 gramme (7 to 15 grains), preferably in wafers or capsules. If in solution, this should be freshly prepared (with peppermint water) and without sugar or mucilage. Manufactured by Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color and Chemical Company, New York).

ALPHOZONE.

Alphozone—$(COOH{\cdot}CH_2CH_3CO)_2O_2 = C_8H_{10}O_8$, an organic peroxide resulting from the action of hydrogen dioxide on succinic anhydride.

Actions and Uses.—Alphozone belongs to the class of organic peroxides, and by its powerful oxidizing power becomes a germicide and antiseptic. Dosage.—Alphozone is also marketed in the form of tablets containing each 0·065 gramme (1 grain) of alphozone, which are used for making solutions, 1 tablet to 60 c.c. (2 fluid ounces) of water giving a solution (1 to 1000) suitable for general external use; but, as a nasal douche, one tablet in 180 c.c. (6 fluid ounces) of water is often preferred. Manufactured by F. Stearns & Co., Detroit, Mich.

ALUMNOL.

The aluminum salt of β-naphtholdisulphonic acid, $Al_2(C_{10}H_5OH{\cdot}(SO_3)_2)_3 = Al_2C_{30}H_{18}O_{21}S_6$.

Actions and Uses.—It is an astringent and mild antiseptic. It is claimed that it can be used as a mild astringent, an irritant or a caustic, according to the strength of the solution, and it is asserted that it exerts a peculiar destructive action on gonococci. It has been recommended for a variety of affections in which a caustic, astringent or antiseptic is indicated. It has been particularly recommended for gonorrhea in females, especially when affecting the endometrium. Dosage.—As a surgical antiseptic, in 0·5 to 3 per cent. solutions; in gynecology, in 2 to 5 per cent. solutions; in otology and laryngology, either as powder or in ¼ to 1 per cent. solution as douches, washes or gargles; as cautery, in 10 to 20 per cent. solution. Manufactured by Farbwerke, vorm. Meister, Lucius & Bruening, Hoechst a. M. (Victor Koechl & Co., New York).

ANTITHYROID PREPARATIONS.

Preparations obtained from the blood or milk of animals, after the removal of the thyroid glands. The use of these preparations is based on the theory that the thyroid gland secretes products which are toxic, but which neutralize, and are neutralized by, other toxic substances produced elsewhere in the body. Removal of the thyroid glands, therefore, leads to the accumulation of these second toxic substances as evidenced by the phenomena of cachexia strumipriva and myxedema. On the other hand, the blood or milk of such animals is capable of preventing the effects of a hypersecretion of thyroid substance, such as is supposed to occur in Basedow's disease (exophthalmic goiter). These views are still largely hypothetical; but the majority of clinical observers report markedly beneficial results in the milder forms of the disease and in obscure nervous disorders which are supposedly connected with thyroid hypersecretion. The effects are less pronounced in the more severe forms. The action is merely palliative and other methods of treatment should not be neglected. Improvement occurs in two or three weeks and is indicated by an amelioration of the nervous symptoms, tremors, palpitation, insomnia and excitability. The administration must be long continued. Oral and hypodermic administrations are equally effective, but the former is usually preferred. These preparations are not toxic, even when very large doses are used.

ARGENTAMIN.

An aqueous solution of silver nitrate and ethylenediamine, corresponding to 10 per cent. of silver nitrate.

Actions and Uses.—It is antiseptic and astringent like other silver salts, with the asserted advantage of being non-irritant and more penetrating than silver nitrate. It is said to be useful in all cases where the non-caustic action of silver nitrate is indicated. Dosage.—It may be used in the anterior urethra in 0·25 to 1 per cent. solution; in the posterior urethra in from 1 to 4 per cent. solution; in ophthalmology in 5 per cent. solution. Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering, Berlin. (Schering & Glatz, New York.)

ARGONIN.

A soluble casein compound containing 4·28 per cent. of silver.

Actions and Uses.—Its actions and uses are similar to those of silver nitrate, but it is claimed to have greater power of permeating living colloid membrane than other silver albumoses. It is applied as an injection in 0·1 to 0·2 per cent. solution; in ophthalmic practice a 10 to 20 per cent. solution in glycerin may be used. Dosage.—It is generally used in 0·5 per cent. solution, but even 20 per cent. solutions have been injected without producing irritant symptoms. Manufactured by Farbewerke vorm. Meister, Lucius & Bruening, Hoechst a. M. (Victor Koechl & Co., New York).

ARGYROL.

A compound of a derived proteid and silver oxide, containing from 20 to 25 per cent. of silver.

Actions and Uses.—Solutions of argyrol (20 to 50 per cent.) are said to be non-irritating to mucous membranes. Taken internally it is said to be non-toxic. It is claimed to be an antiseptic. It is recommended in urethritis and cystitis, in conjunctivitis and in affections of the nose, throat and ear. Dosage.—It is employed in from 10 to 25 per cent. and even stronger solutions. Manufactured by Barnes & Hille, Philadelphia.

GLYCEROPHOSPHATES.

The salts of glycerophosphoric acid $H_2(CH_2OH{\cdot}CHOH{\cdot}CH_2)PO_4$; usually the two remaining hydrogen atoms of phosphoric acid are replaced by the base; $Na_2(CH_2OH{\cdot}CHOH{\cdot}CH_2)PO$.

Actions and Uses.—These salts were introduced as "nerve foods" and tonics on the theory that their phosphorus, being a step nearer lecithin, is assimilated more readily than that of hypophosphites. Neither the experimental nor the clinical evidence is considered conclusive by all authorities. Dosage.—The potassium and sodium salts may be given hypodermically 0·2 to 0·25 gramme (3 to 4 grains) in normal saline solution, or *per os* 0.25 to 0.65 gramme (4 to 10 grains) in water or syrup. The calcium, iron, lithium, magnesium and manganese salts 0·2 to 0·65 gramme (3 to 10 grains) doses, preferably in the form of tablets; the quinine salt in 0·1 to 0·33 gramme (1½ to 5 grains), and the strychnine salt in 0·001 to 0·003 gramme (1/60 to 1/20 grain) doses.

HEDONAL.

Hedonal, $CH_3 \cdot CH_2 \cdot CH_2 \cdot CH\ (CH_3)O \cdot CO \cdot NH_2 = C_6H_{13}O_2\ N$, a urethane differing from ethyl carbamate, U. S. P., in that the ethyl radicle has been replaced by the radicle of methylpropylcarbinol (pentan-2-ol.) $CH_3.CH_2.CH_2.CHOH.CH_3$.

Actions and Uses.—Hedonal appears to have a greater hypnotic effect than ethyl carbamate. It is said to be followed by no after-effects and is oxidized in the body to urea and carbon dioxide. It is recommended in insomnia due to mental overwork or nervous excitement occurring in the course of neurasthenia or hysteria. It is claimed to be particularly useful preliminary to anesthesia, a hypnotic dose being given and anesthesia effected with chloroform after the patient has been asleep for an hour. Dosage.—1 to 2 grammes (15 to 30 grains), administered dry, followed by a swallow of water, or in wafers or capsules. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Company, New York.)

HEXAMETHYLENAMINE METHYLENCITRATE.[1]

This substance, $C_6H_8O_7\ (CH_2)_6N_4 = C_{12}H_{20}O_7N_4$, is a compound of hexamethylenamine with anhydromethylencitric acid.

Actions and Uses.—It is a urinary antiseptic and germicide claimed to be more prompt and energetic in its action than hexamethylenamine, acting equally well whether the urine be alkaline or acid in reaction, rapidly clearing it up and allaying pain. Dosage. —0 6 to 1 gramme (10 to 15 grains).

HOLOCAINE HYDROCHLORIDE.

Holocaine hydrochloride. $CH_3 \cdot C\ (:N \cdot C_6H_4OC_2H_5)\ (\cdot NH \cdot C_6H_4 \cdot OC_2H_5) \cdot HCl = C_{18}H_{22}N_2O_2 \cdot HCl$, the hydrochloride of a basic condensation product of paraphenetidin and acetparaphenetidin (phenacetin).

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[1] This is the chemical name for a preparation on the market under the names of helmitol and urotropin, new.

Actions and Uses.—It is a local anesthetic like cocaine, but having the advantage of quicker effect and an antiseptic action. Five minims of a 1 per cent. solution when instilled into the eye are usually sufficient to cause anesthesia in from 1 to 10 minutes. It is more toxic than cocaine and without effect on the pupil or blood-vessels. It is not so useful as cocaine when the vasoconstrictor effect of the latter is desired. It is said not to cause the scaliness of the cornea which sometimes results after the use of the older remedy. Dosage.—It is applied in a 1 per cent. aqueous solution. Manufactured by Farbwerke, vorm. Meister, Lucius & Bruening, Hoechst a. M. (Victór Koechl & Co., New York).

HYPNAL.

Hypnal, $C_{11}H_{12}N_2O \cdot CCl_3CH(OH)_2 = C_{13}H_{15}N_2O_3Cl_3$, antipyrine combined with one molecule of hydrated chloral.

Actions and Uses.—Hypnal is an analgesic and hypnotic resembling chloral in its action, but said to be less liable to produce injurious effects on the vaso-motor centre of the heart. It may be used where chloral is indicated, as in mild forms of mental excitement, incipient delirium tremens, and in insomnia caused by pain. Dosage.—1 to 2 grammes (15 to 30 grains); although supposed to be less toxic than chloral, larger doses up to 3 grammes (45 grains) should be used with caution. Manufactured by Farbwerke, vorm. Meister, Lucius & Bruening, Hoechst a. M. (Victor Koechl & Co., New York).

IODIPIN.

Iodipin is an iodine addition product of sesame oil containing 10 per cent. iodine, in organic combination.

Actions and Uses.—Iodipin acts in the system similar to the iodides, being broken up in a manner analogous to that described under bromipin, which see. Its action is more lasting and with less tendency to iodism. Manufactured by E. Merck, Darmstadt. (E. Merck & Co., New York).

EUMYDRIN.

Eumydrin $C_6H_5(HO \cdot CH_2)\ CH \cdot CO_2 \cdot C_7H_{11}\ N(CH_3)_2NO_3 = C_{18}H_{27}O_6 N_2$, the nitrate of methylated atropine.

Actions and Uses.—Eumydrin is a mydriatic and antihydrotic, replacing atropine sulphate both internally and externally in corresponding doses. It is claimed that it dilates the pupil more rapidly than atropine and the dilatation is of shorter duration—being intermediate in these respects between atropine and homatropine. It is said to be much less toxic than atropine, so that larger doses may be given to secure the effect. It is particularly recommended for the treatment of night sweats, whooping cough and the relief of enuresis. Dosage.—Internally as an antihydrotic, 0·001 to 0·0025 gramme ($\frac{1}{60}$ to $\frac{1}{24}$ grain). Externally as mydriatic, in solutions about one-tenth stronger than the usual atropine solutions. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York).

EUPHORIN.

Euphorin, $CO (HN.C_6H_5) (OC_2H_5) = C_9H_{11}O_2N$, a compound closely allied to Æthylis Carbamas, U. S. P. (urethane) and differing from this by the replacement of the group NH_2 by NHC_6H_5.

Actions and Uses.—Euphorin is anodyne, antipyretic and antiseptic. It is recommended in rheumatism, sciatica, headache, etc. Externally it is recommended to be applied as a dusting powder in venereal and skin diseases, ulcers, burns, etc. Dosage.—0·5 to 1 gramme (8 to 15 grains) dissolved in wine or suspended in water; externally in powder, in lanolin ointment and in superfatted soap. Manufactured by Fabrik von Heyden, Radebeul near Dresden.

EUPHTHALMIN.

Euphthalmin, $C_{17}H_{25}NO_3.HCl$, a mandelic acid derivative of beta-eucaine.

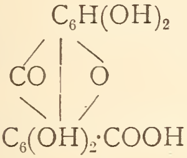
Actions and Uses.—Euphthalmin produces prompt mydriasis free from anesthetic action, pain, corneal irritation, or rise in arterial tension. It has little or no effect on accommodation, and this disappears more rapidly than with atropine, cocaine, hematropine, etc. In its effects on the general system, euphthalmin very closely resembles atropine. Dosage.—2 or 3 drops of a 5 to 10 per cent. solution, according to age of the patient and the nature of the case, are instilled into the eye. Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering, Berlin (Schering & Glatz, New York).

EUQUININE.

Euquinine, $C_2H_5O\cdot CO\cdot OC_{20}H_{25}N_2 = C_{25}H_{28}O_4N_2$· quinine ethyl carbonic acid ester.

Actions and Uses.—Euquinine is claimed to have the same action as quinine, with the advantage of being tasteless, owing to its insolubility in water and alkaline media. Dosage.—The same as quinine. Manufactured by Vereinigte Chininfabriken, Zimmer & Co., Frankfort a. M. (Merck & Co., New York).

GALLOGEN.

Gallogen.  $= C_{13}H_6O_8$· anhydrous ellagic acid prepared from Divi-divi, the pods of *Cæsalpinia coriaria,* containing more than 50 per cent. of tannin.

Actions and Uses.—Gallogen is an astringent and antidiarrheic, slowly decomposed in the intestinal tract, thus exerting its astringent action gradually during its passage. It has been recommended in dysentery, cholera infantum, diarrhea, and is said to be useful even in those of a syphilitic or tuberculous origin. Dosage.—0·3 to 0·5 gramme (5 to 8 grains) for children; 0·6 to 1 gramme (10 to 15 grains) for adults, suspended in neutral or slightly acid media. Manufactured by Ad. Heinemann, Eberswalde (C. Bischoff & Co., New York).

THE AMERICAN PHARMACEUTICAL ASSOCIATION.

PHILADELPHIA BRANCH.

The ninth stated meeting of the Philadelphia Branch of the American Pharmaceutical Association was held on the evening of Tuesday, March 5, 1907, in the Hall of the College of Physicians.

The subject under discussion, "The Indiscriminate Renewal of Physicians' Prescriptions," elicited considerable difference of opinion, and the discussion itself was participated in by a rather unusual number of the members and visitors who were present.

The repeating of prescriptions, from a physician's point of view, was discussed by Dr. A. O. J. Kelly, who confessed that he, in common with probably the greater majority of physicians, had no positive or well defined ideas on the limitations that should properly be set on the renewal of prescriptions.

On the one hand he believed that the renewal of prescriptions for many comparatively simple external applications, such as mild rubefacient liniments, and even the renewal of many prescriptions designed for internal use, such as stomachics and mild laxatives, could not well be objected to from any reasonable point of view.

On the other hand prescriptions containing potent remedies, or remedies that are at all known to create drug addiction or to do harm if long continued, should not be renewed indiscriminately, and should under no condition be trafficked in and never filled for any other than the original holder of the prescription.

In this connection Dr. Kelly quoted a number of instances that had come to his personal attention where the continued or the unwarranted use of potent remedies had done much, and in several instances at least permanent, injury.

Mr. Franklin M. Apple presented "An Efficient Plan for Controlling the Renewal of Prescriptions." Mr. Apple thought that the need for some well defined plan to prevent the renewal of prescriptions was well evidenced by the ever increasing number of physicians who were using some form of injunction on their prescription blanks. He discussed, at some length, the several forms of injunction that had been brought to his attention and compared these with the form that had been devised by him. This form he designated "The square deal prescription blank," as it puts the responsibility, for the refusal to renew a prescription, where it rightly belongs—on the physician.

Mr. Apple's prescription blank has on the face, immediately under the physician's name and address, the following:—

"NOTE—The conditions under which this prescription is written will be found on reverse side hereof."

On the reverse is the following:—

"This prescription is written for the party whose name appears thereon, for the present indications only; hence it is *not to be renewed* without my written consent, and *no copy of same is to be given.*

"The Pharmacist compounding it will kindly preserve same on his prescription file."

Mr. John K. Thum read a paper entitled "A Retrospect of Discussions on the Renewal of Prescriptions," in which he briefly reviewed a number of recorded discussions on this particular subject and quoted at length from an opinion by the late Dr. E. R. Squibb, expressed in Philadelphia in 1868. In discussing the desirability of having a law to regulate the renewal of prescriptions Dr. Squibb asserted that it would be unwise to introduce law or fixed rules to govern the renewal of all prescriptions and that after all it was but a matter of honesty, good sense and education on the part of the pharmacist.

Mr. Thum held that this opinion by Dr. Squibb covered the question fully as well to-day as it did forty years ago. He further expressed the belief that the pharmacist could and should control the indiscriminate renewal of prescriptions that are at all likely to do harm, by following the plan described by Mr. William Burke, of Detroit, at the semi-centennial meeting of the American Pharmaceutical Association, in Philadelphia, in 1902. Mr. Burke's plan was to discourage the refilling of prescriptions by attaching to all repeats a small sticker with a legend somewhat as follows:—

"More harm than good is often done by repeating these prescriptions, and it is well to consult your physician before refilling."

Dr. H. C. Wood, Jr., in opening the general discussion, said that we should never lose sight of the most important factors in this connection, and they are the protection of the public health and the guarding of patients against the ever possible generation of a drug habit.

He believed it to be wise for physicians to write the injunction not to renew the prescription on all orders for potent or habit-forming drugs, but he also believed that where this had been omitted it should be the duty of the pharmacist to guard the patient from the abuse of medicines of this kind. In concluding he expressed the opinion that common sense and forethought would tend to make the question of the renewal of prescriptions a very simple one.

The question was further discussed by Drs. Cattell, Robinson, Minehardt, Lowe, Thrush, Stewart, Smith and Kelly, and by Messrs. Remington, Gable, Blair, McIntyre, Wilbert, Greenawalt, Hunsberger, Apple and Thum. As noted before, the discussion elicited considerable difference of opinion on a number of the points that were involved, and at the conclusion of the discussion the secretary was instructed to communicate with the proper officers of the Philadelphia County Medical Society with a view of having the members of that organization express their desires regarding the refilling of prescriptions.

Among the several questions that were brought up in connection with or bearing on the renewal of prescriptions it may be interesting to note the following, with a view of presenting them for further discussion :

Who owns the prescription ?

Is an agreement that does not bear the signatures of both parties valid ?

Would the Courts sustain a pharmacist in refusing to refill a prescription bearing an injunction " Not to be refilled "?

Should a pharmacist always retain the original prescription ?

Can a pharmacist, legally, refuse to give the patient a copy of the prescription ?

What is the status of the copy of a prescription ?

Should a reputable pharmacist fill or refill a " copy " ?

Granted that a " copy " should be recognized as a prescription, should the pharmacist differentiate between a copy written by a pharmacist and one written by the patient himself ?

What relation does the " copy " of a prescription bear to the printed prescriptions found in many of our daily papers ?

Should newspaper prescriptions be filled by reputable pharmacists ?

These questions, and many more that might be cited, presented themselves either directly or indirectly in the course of the discussion, and despite the fact that some of them at least would appear to be capable of a direct answer, they all allow of a difference of opinion, and together they amply justify the indecision of this particular meeting of the Philadelphia Branch.

This being the annual meeting, the discussion was preceded by a business meeting and election of officers.

The business meeting included the reports of several committees, the first of which, the committee on the death of Albert E. Ebert, reported the following preamble and resolutions:

WHEREAS, the death of Albert E. Ebert removes from the ranks of the American Pharmaceutical Association one of the most active workers and truest adherents, and constitutes an irreparable loss to the science of pharmacy in America. Now, therefore, be it

Resolved, That we, the members of the Philadelphia Branch of the American Pharmaceutical Association, in meeting assembled, record our sorrow at this loss. Be it further

Resolved, That we deplore his death as friends and as fellow workers in the field of pharmacy. Be it further

Resolved, That we heartily endorse the proposed monument to perpetuate the memory of Albert E. Ebert and urge that the members of the Philadelphia Branch of the American Pharmaceutical Association contribute toward the fund which is now being raised to erect a monument to his memory.

Dr. H. C. Wood, Jr., as chairman of the committee on exhibitions, made an exhaustive report, detailing what had been accomplished to date, and outlining, in a general way, the exhibition that it was proposed to make in connection with the annual meeting of the American Medical Association in Atlantic City during the coming summer.

Dr. Wood said, in part: "The authorities of the American Medical Association, through the Section on Pharmacology and Therapeutics, have given permission for an exhibit of pharmaceuticals to be held in connection with the regular scientific exhibit of the association, in which the Bureau of Chemistry of the Department of Agriculture has also promised to co-operate.

"Your committee desires in the first place to express its conviction that a most extraordinary opportunity is offered to this association, or branch, to render an inestimable service to the professions of pharmacy and medicine—a service which would inure not only to the benefit of humanity but also to the credit of the Philadelphia Branch of the American Pharmaceutical Association."

Dr. Wood then detailed the plans for this proposed exhibition and concluded with the statement that the committee "believe it much better not to exhibit too large a number of preparations, as a mass of material would likely lead to confusion, but to show a comparatively few types that would tend to have a permanent educational effect on the visiting medical men."

The election of officers for the coming year resulted in the selection of the following: President, Joseph P. Remington; First Vice-President, William McIntyre; Second Vice-President, William L. Cliffe; Secretary-Treasurer, Martin I. Wilbert.

M. I. Wilbert, *Secretary.*

DRUG AND FOOD INSPECTION DECISIONS.

NATIONAL FORMULARY APPENDIX.

The National Formulary is one of the standards recognized under the law. The question has been asked a number of times whether the appendix of this authority would be construed as part and parcel of the book itself. On page IV of the preface it is distinctly stated that the formulæ collected in the appendix of the National Formulary are "no longer designated as 'N. F.' preparations." This shows that these formulæ are not integral parts of the book under the law, which covers only those products of the National Formulary recognized as such by this authority. By this it is understood that if a drug product is sold under a name contained in the appendix of the National Formulary, it will not be necessary for such product either to conform to the standard indicated by the formula or to declare upon the label its own standard strength, quality, and purity if a different formula is employed in its manufacture. Such articles are, however, subject to the law in every other respect, as is the case of other medicinal products not recognized by the U. S. Pharmacopœia or National Formulary.

James Wilson,
Secretary of Agriculture.

Washington, D. C., March 13, 1907.

DECLARATION OF THE QUANTITY OR PROPORTION OF ALCOHOL PRESENT IN DRUG PRODUCTS.

The question of stating the percentage of alcohol present in drug products has caused a multitude of inquiries. The following questions along this line serve as examples:

"Is it necessary to give the amount of alcohol present in U. S. Pharmacopœial or National Formulary products? It seems to me that such a requirement is absurd, and not contemplated within the spirit of the act. None of them are patent medicines. Will I be compelled to tell how much alcohol is present in such goods?"

"If we apply for and obtain a serial number, must we in addition to putting this number on our labels state the per cent. of alcohol?

"Will it be necessary to give the per cent. of alcohol present in such products as ether, chloroform, collodion, spirit of nitrous ether, and similar preparations?"

The law is specific on the subject of declaring the amount of alcohol present in medicinal agents, as can readily be seen from the following language: "An article shall also be deemed misbranded * * * if the package fail to bear a statement on the label of the quantity or proportion of any alcohol * * * contained therein." No medicinal preparations are exempt, whether they are made according to formulæ given in the U. S. Pharmacopœia or National Formulary or formulæ taken from any other source. The serial number, with or without the guarantee legend, does not exempt a preparation from this requirement. The law does not make any statement as to the amount of alcohol that may or may not be employed. It requires, however, that whatever amount be present shall be set forth on the label. The percentage of alcohol given on the label should be the percentage of absolute alcohol by volume contained in the finished product. The manner in which it should be printed is shown in F. I. D. 52.

JAMES WILSON,
Secretary of Agriculture.

WASHINGTON, D. C., March 13, 1907.

METHOD OF STATING QUANTITY OR PROPORTION OF PREPARATIONS (CONTAINING OPIUM, MORPHINE, ETC.) USED IN MANUFACTURING OTHER PREPARATIONS.

Many inquiries are received as to the method of stating the quantity or proportion of preparations (containing opium, morphine, etc.) used in the manufacture of other preparations. Of these the following are typical:

"If the label on the bottle were to bear the words 'Tincture of Opium,' I reason that as this is a definitive preparation, constituting a preparation of opium, and so definite as to its composition that to any intelligent persons it expresses definitely all that it is desirable to express, the use of this title alone should be sufficient. I feel that as a preparation it is distinct from opium, and if this particular tincture is used in the manufacture of a preparation the mention of it alone should be sufficient.

"Where extract or tincture of cannabis indica, or extract of opium, is employed in making other drug products, would it not be complying with the law if the use of such articles be clearly indicated on the label as prescribed by the law, or is it necessary to give the actual amounts of the drugs themselves represented by these preparations ?"

Names of drug products bearing any of the names of the ingredients enumerated in the act are construed as representing "preparations" within the meaning of the act; and if the same are clearly declared upon the label as required by Regulations 17 and 30, it will not be necessary to give the actual amount of the primary drugs used or represented by such article. It is desirable, however, that the word or words used in the law shall constitute the first part of the name of the product. For example: "Opium, Tincture of"; "Cannabis Indica, Extract of," followed by the amount of tincture or extract used.

JAMES WILSON,
Secretary of Agriculture.

WASHINGTON, D. C., March 13, 1907.

RESOLUTIONS ADOPTED BY THE PHARMACEUTICAL PRESS OF AMERICA.

The following resolutions have been signed by the editors of the leading pharmaceutical journals of the United States:

WHEREAS, Albert Ethelbert Ebert died November 20, 1906; therefore, be it

Resolved, That we, the editors of the pharmaceutical periodicals of America, express our sorrow and testify to Mr. Ebert's long and exceptionally valuable life as that of one of the most able, indefatigable and conscientious of public-spirited pharmacists of this country.

Resolved, That Mr. Ebert, for some years editor of the *American Pharmacist*, always retained his interest in the pharmaceutical press and was ever ready to co-operate with the editors in a frank and liberal manner. Be it further

Resolved, That we heartily endorse the plan of erecting an Ebert memorial monument and will render the movement material assistance.

Resolved, That a copy of these resolutions be furnished the Committee on Memorial Volume of the American Pharmaceutical Association, and also be printed in our respective publications.

MARCH PHARMACEUTICAL MEETING.

The stated pharmaceutical meeting of the Philadelphia College of Pharmacy was held on March 19th, with William McIntyre in the chair.

A conjoint paper on "The Determination of Acetanilid and Phenacetin in Pharmaceutical Preparations," by Joseph L. Turner and Charles E. Vankerkleed, chemists of the H. K. Mulford Company, was read by the former. The authors presented two methods for the estimation of acetanilid and phenacetin in complex mixtures containing organic substances, and stated that such methods are made necessary by that provision of the Food and Drugs Act which requires an accurate statement on the label of the amount of acetanilid or phenacetin present in a preparation. (See page 151.)

C. M. Kline sent a communication from the research laboratories of the Smith, Kline & French Company, entitled "Some Notes on Opium from the Commercial Standpoint," which was read by W. A. Pearson, a member of the laboratory staff. The author described various commercial varieties of opium, and said that opium is produced in many countries in the East and differs largely in appearance, odor and strength according to the country or district in which it is produced, both on account of natural causes and differences in the method of handling. (See page 156.)

Dr. C. B. Lowe described the methods of incising the poppy capsule, and said that in order to prevent the admixture of opium with the tissues of the capsule considerable care is necessary in scraping off the opium. A question arising as to the number of seeds in the poppy capsule, Dr. Lowe said that it had been estimated that they average about 40,000.

Mr. Pearson said that last season in Michigan he had been successful in growing the opium poppy, both the white and red varieties, from seeds furnished by the U. S. Department of Agriculture. He, however, only collected about two drachms of opium, as a rain coming on soon after the incising of the capsules, washed away the product.

Attention was directed to a collection of commercial opiums which had been presented to the College some years ago by Messrs. Gilpin, Langdon & Co.

Referring to the U.S.P. assay method for opium, Mr. Pearson said that he preferred the titration method to the gravimetric, as he had found the lime-water correction difficult. Mr. Turner, on the other hand, preferred the gravimetric method, and recommended the use of 4 c.c. of ammonia water. He also remarked that the same results could be obtained by the use of calcium hydroxide, which has the advantage of facilitating filtration.

Prof. Henry Kraemer gave a talk on "Some Recent Drug Adulterants and Substitutes." Attention was first directed to some specimens which had been presented by students of the college and others, as follows: Papaw fruits (*Carica Papaya*), by F. I. Lamas, of Sagua la Grande, Cuba; several thick quills of bark sold for cinnamon, by H. E. Strauss; a number of specimens of edelweiss (*Leontopodium*) collected in Switzerland, by E. M. Messmer; specimens of ginseng root and seed, and cotton, from Joseph Jacobs, of Atlanta, Ga.; some specimens of rye heads bearing ergot grains, by Eli Lilly, of Indianapolis. Professor Kraemer's observations on adulterated drugs will be embodied in a paper and published later.

FLORENCE YAPLE, *Secretary pro tem.*

NOTES AND NEWS.

GENEROUS DONATION TO THE FOOD AND DRUG LABORATORY FUND.—Benjamin T. and Samuel W. Fairchild, graduates of the Philadelphia College of Pharmacy, have shown their substantial interest in the progress of their Alma Mater by sending a check to Professor Remington for $500, to be applied to the building fund for the new food and drug laboratory. This donation is all the more acceptable because it is a free-will offering of two loyal sons.

JAPANESE LAC. The thesis presented to the faculty of the University of Bern for the degree of Doctor of Philosophy, by Professor Alviso B. Stevens of the University of Michigan, is a valuable monograph entailing considerable research work on the nature of the poisonous principle in Japanese lac (Ki-urushi). The poisonous principle is intimately associated with the resin of the lac. It is obtained by adding 4 parts of alcohol to 8 volumes of a benzin solution of the lac, then thoroughly agitating the mixture and allowing it to stand. The lower alcoholic layer is of a reddish-brown color and contains the toxic principle. The author has been engaged for some time in a comparative study of the toxic principle of *Rhus toxicodendron* and *R. venenata* and that of the lacquer tree *R. venicifera.*

THE FOOD AND DRUGS ACT. Several pamphlets have been published containing a reprint of the National Food and Drugs Act in connection with the rules and regulations for its enforcement. One of the first of these pamphlets to be published is that of the *American Druggist*, which contains a valuable article giving a legal opinion on "The Responsibilities of the Retailer" by William L. Perkins, Esq. Mahlon N. Kline, President of the Smith, Kline and French Company of Philadelphia, has also prepared a digest of the National Food and Drugs Act together with the regulations, which contains comments by Mr. Kline and others regarding their interpretation. The *National Druggist* has also published a pamphlet of 64 pages containing much valuable information. It is very fortunate that so much published material is available for the use of the trade in making clear the requirements of the new law and in showing associations and legislators the difficulties that must be avoided in framing state legislation.

PROF. A. B. STEVENS is the author of a book on "Arithmetic in Pharmacy" which was published some time ago by Merck & Co. The articles originally appeared in *Merck's Report* and the work is intended to cover all of the calculations required by the practical pharmacist. The book has been prepared not only for advanced students but for pharmacists and others who have been deprived of a liberal education. Pharmacists will find the book of considerable use and it will also be found helpful in the training of the apprentice.

THE EXTRA PHARMACOPŒIA of Martindale and Westcott has been brought up to date in the twelfth edition. One is surprised at the large amount of information which it contains that is the result of recent investigations. The pages on opsonins and the opsonic index, the preparation of the ferments of yeasts, the trypsin treatment of cancer, and the new drugs, chemicals, etc., are replete with useful information and make it one of the most desirable reference books in shop practice.

MERCK'S ANNUAL REPORT (1905) contains much interesting information on the advancements in pharmaceutical chemistry and therapeutics. The articles are most carefully prepared and contain much information that is not found either in the Progress of Pharmacy of the A. Ph. A. or in the pharmaceutical journals.

PROGRESS IN PHARMACY AND THERAPEUTICS. Lehn and Fink's "Notes on New Remedies" are always welcome. The present pamphlet, including abstracts from July, 1905, to July, 1906, contains much more than the title indicates, giving as it does a considerable number of analytical data, such as the test by Utz for differentiating Bombay and Banda mace, Milleau's method for detecting foreign fats and oils in cocoa butter, as well as other tests.

WOMEN'S ORGANIZATION OF THE N. A. R. D. This adjunct of the N. A. R. D. was established at the Boston meeting in 1905. Since that time branches have been formed in several of the larger cities, including Boston, Chicago, Washington, Atlanta, and Brooklyn. A local branch was organized in Philadelphia on February 15th. Mrs. Leslie O. Wallace of Boston, President of the National Women's Organization, was present and helped in the formation of the local chapter. The following officers were elected :—President, Mrs. William Estell Lee ; first vice-president, Mrs. William T. Burk ; second vice-president, Mrs. N. S. Steltzer ; third vice-president, Mrs. W. H. Vandegrift ; recording secretary, Mrs. H. L. Stiles; corresponding secretary, Mrs. C. W. Shull; treasurer, Miss Emily Marsden.

The newly elected President appointed the following Board af Managers :—Mrs. T. H. Potts, Mrs. Charles Leedom; Mrs. C. L. Bonta, Mrs. Christian Moore, Mrs. J. C. Peacock, Mrs. J. Epstein and Mrs. Ida E. Stadelman. Four committees were appointed, with the following chairmen: Hospitality, Mrs. W. H. Gano; Social, Mrs. Charles Rehfuss; Educational, Miss Susanna G. Haydock; Press, Mrs. J. Leyden White.

Meetings will be held on the second Tuesday of each month at the College of Pharmacy. The society has 106 charter members.

THE COMMITTEE ON EXHIBITIONS of the Local Philadelphia Branch of the A.Ph.A. had a meeting to consider the exhibition in connection with the annual meeting of the American Medical Association at Atlantic City in June. It was decided to make the exhibition educational in character and to limit it to comparatively few preparations that could be used to displace some of the more objectionable of the proprietary nostrums now on the market. The subject will be further discussed at a coming meeting of the local branch when the details of the exhibit will be arranged.

PHILADELPHIA COLLEGE OF PHARMACY.

FOOD AND DRUG ANALYSIS COURSE.

A new course for the special instruction and training of Food and Drug Analysts, at the Philadelphia College of Pharmacy.

By reason of the passage of the National Food and Drugs Act on June 30, 1906, there has developed a pressing need for trained chemical and microscopical analysts, not only on the part of the United States Government, for the practical execution of this law, but also on the part of large manufacturing houses and dealers in drugs and chemicals.

The recent civil service examination of candidates to fill positions of analysts under the new act has demonstrated that the supply of such analysts is entirely inadequate to meet the present demands, and when the operation of the law begins to be felt the demand is certain to be greatly increased.

In addition to the National law, it is known that many States have similar legislation under consideration, if not already enacted. The present three years' course of this college leading to the degree of Doctor of Pharmacy covers much of the ground needed for the education of such analysts, and this is especially true of the regular third-year work, taken in connection with the Supplementary Spring Course. This latter course has been in operation for several years past and will be found to contain in the special chemical lectures on Food Analysis and Detection of Adulteration, together with the laboratory exercises connected therewith, and the practical course in the Microscopical Examinations of Foods and Drugs, much that bears directly on these subjects. However, the importance of the subject is such, in view of the sweeping legislation which has been enacted, that the trustees of the Philadelphia College of Pharmacy have considered it necessary to provide greatly enlarged facilities, and to establish a distinct and independent two years' course to cover this work in a fuller and more complete way. They have, therefore, arranged to erect upon adjacent property (already owned by the college) a new laboratory, arranged and equipped for instruction in food and drug analysis, which laboratory it is proposed to have ready for use at the beginning of the regular session, October 1, 1907. (In the meantime the present laboratories will be used for the Summer Course, which will begin about May 20th.)

The regular course on this subject as planned by the Board of Trustees will cover two years of eight months each of *continuous* work, beginning in October of each year.

FIRST YEAR.

In the first year of this course, the students receive parts of the regular didactic chemical instruction given to the students of the first and second years of the regular three-year pharmacy course, as well as portions of the first-year and second-year pharmacy lectures of the same course. In addition to these, weekly exercises in the Botanical and Microscopical Laboratory on plant structure and microscopical technique will be provided, and in the Chemical Laboratory instruction will be given in *qualitative* chemical analysis, and the examination of unknown substances both liquid and solid, as well as a course upon the examination of the pharmacopœial chemicals for identity and purity.

SECOND YEAR.

In the second year the students will attend the complete course on general and pharmaceutical organic chemistry given in the third-year pharmacy course, as well as the supplementary course of lectures in food analysis and adulteration. A course in chemical mathematics is also arranged for the students of this year. In addition, a special course for students of this course only, will be given on the manufacturing processes and products of organic chemistry, as well as a course of lectures on the natural history and geographical distribution of foods and drugs, and a course upon the general medicinal properties of drugs.

All the time not required for these courses of lectures is given to the work of the microscopical and chemical laboratories. In the former, the microscopical study of powdered drugs, spices, foods, fibers, and vegetable products, together with fats and other animal products, is taken up in detail and a full course of technical microscopy is planned in this connection. These lectures and laboratory exercises will be supplemented by a number of excursions to manufacturing establishments and elsewhere.

In the chemical laboratory, the instruction in this year will cover the fundamental methods for gravimetric, volumetric, gasometric and colorimetric processes, and particularly in their application to pharmacopœial chemicals and preparations.

The different classes of food products will be taken up and the methods of analysis as prescribed in the "Provisional Methods of the Association of Official Agricultural Chemists," accepted as standards by the Department of Agriculture, will be gone over in detail with numerous examples for practice.

The study of preservative and coloring matters needed in order to detect adulteration and sophistication of food products will also be carried out in fullest degree.

During this second year it is proposed to have in addition a special course of lectures to be given at frequent intervals by experts in different lines covered by the course of instruction, who will constitute a corps of special lecturers chosen because of their acknowledged position and authority in different lines of work. A great variety of important special topics can thus be presented that would be impossible to have in the ordinary lectures and laboratory exercises. It is the intention to cover in this course various lines of manufacturing chemistry as related to food products, and the commerce of staple articles, including the importation and exportation of crude and manufactured products.

QUALIFICATIONS FOR ENTRANCE.

Candidates for this course of instruction will be expected to satisfy the Dean of the Course of their possessing such an amount of previous scholastic education or practical training as to enable them to take up the work of the first year as given.

Those completing the first-year course and graduates of the Philadelphia College of Pharmacy, and other institutions having either a complete course leading to the pharmaceutical degree, or a scientific course leading to the same, will be admitted to the second year of this course in food and drug analysis, on presentation of their diplomas and transcript of their college record and approval of the same by the Dean.

SUMMER PREPARATORY COURSE.

Recognizing the urgency of the present demand for skilled analysts, and in answer to the expressed desire of many graduates of pharmacy schools to prepare themselves for this work, the trustees have arranged for a summer preparatory course for the spring and summer of 1907, to begin May 20th, and continue until the latter part of September. This is intended to afford graduates and others of mature years and practical experience the opportunity of preparing themselves by a rapid review of the work indicated as belonging to the first year of this course, to enter in the fall of 1907 upon the regular second year of this course.

For all but the most recent graduates this review of the chemical, pharmaceutical, botanical and microscopical work above enumerated is practically indispensable for the successful prosecution of the detailed work of the second year.

FEES.

The complete fee for each of the two years of this course, covering all lectures and laboratory instruction, shall be $150.

The fee for the summer preparatory course shall be $100. The usual matriculation fee of $5 is required of all students in the Philadelphia College of Pharmacy, whether in regular or special courses. This is paid but once, on the entrance of the student to any instruction in the College.

THE AMERICAN
JOURNAL OF PHARMACY

MAY, 1907.

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THE DETECTION OF ARSENIC IN BISMUTH PREPARATIONS.

By B. P. Caldwell.

A recent test for arsenic resulted in a controversy between a prominent pharmacist and myself, the account of which I venture to hope may be interesting.

The drug—a preparation of milk of bismuth, consisting of the basic carbonate—was prescribed by a physician for a patient who, after the first dose or two, was attacked with symptoms of arsenical poisoning, which were attributed to the bismuth preparation. He immediately stopped the use of the prescription and reported the case to the pharmacist with the request that he look into the matter. The latter did so and *found arsenic present*—which fact he reported to the manufacturers. The chemist of the manufacturing house then examined a portion of the contents of the druggist's stock bottle from which the prescription had been filled, *but found no arsenic.*

The manufacturing concern then placed the matter in my hands with a request for an immediate report on the presence or absence of arsenic in their bismuth preparation. I thereupon procured in the market a bottle of the preparation, a portion of the same from the druggist's stock bottle, and the patient's prescription to which the evil effects had been attributed.

After carefully examining these I failed to find arsenic in any one. I carried out the Marsh test (both with cold porcelain plunged into the hydrogen flame and with the constricted heated tube), the Gutzeit test, and the Bettendorf test, and repeated the work more than once without result. I tested the sensitivity of my materials and found that in the Marsh test they easily showed much smaller amounts of arsenic than the maximum allowed in the Pharmacopœia.

I was confident then that the results obtained by the druggist were due to impure zinc and sulphuric acid used in the tests which he had carried out; so confident, indeed, that I consented, upon request, to make a demonstration of this fact to the druggist himself.

I therefore set up my apparatus in his laboratory and charged it with my reagents, and showed the total absence of arsenic in the preparation. My apparatus consisted of the ordinary 250 c.c. Florence flask bearing a doubly bored stopper with thistle funnel and delivery tube. To the latter was attached a drying tube fitted with cotton plugs and granular calcium chloride, then the tip, or at other times, a constricted tube for the deposit of the arsenic mirror on heating.

Still the druggist was not satisfied. He wanted me to explain why he had gotten the arsenic stain on porcelain in his tests, as he, also, had used pure reagents. He then suggested that I make a test in his apparatus with my reagents.

His apparatus consisted of a small Erlenmeyer flask of less than 100 c.c. capacity, bearing a single bored stopper with short (3-inch) tube for the hydrogen tip. On using his apparatus with my reagents I was surprised to get a heavy black deposit (mirror) on the porcelain.

The druggist seemed satisfied with that and went on to show me that the stain was soluble in concentrated nitric acid on heating and gave with silver nitrate a reddish-brown coloration—which test, he said, confirmed the presence of arsenic. (This test he took from Simon's chemistry. It depends upon the oxidation of arsenic by nitric acid to arsenic acid and the subsequent precipitation of silver arsenate.) I suggested to him to try the more common test, viz., the solubility of the arsenic stain in sodium hypochlorite. This he did, *but the stain did not dissolve.* I was satisfied then that we were dealing not with an arsenic stain, but with a *bismuth* stain. But the druggist had never heard of a bismuth stain, and neither had I. When I suggested the possibility of bismuth being carried bodily over from his generating flask, which was not provided with anything to arrest it, he told me that that was the way every druggist would make the test.

I then asked him to supply me with some French bismuth which he knew to be free from arsenic. This, when placed in his apparatus, gave the black stain on the porcelain, which stain he had supposed to be arsenic.

On looking into the matter further I found that while silver arsenate is readily dissolved by ammonia, the red-brown stain gotten as above described, did not dissolve; that bismuth pentoxide, gotten by heating the so-called bismuthic acid (which could be obtained by oxidizing bismuth nitrate), is described as a brown powder; that the black stain when dissolved in concentrated nitric acid and evaporated down with hydrochloric acid, gave with hydrogen sulphide a black precipitate, whereas arsenic yields under like treatment a yellow sulphide.

The stain was thus conclusively shown to be bismuth and not arsenic.

I have written the above to impress the importance of something (if nothing more than a cotton wad) to arrest the particles from the generator, in testing for arsenic in bismuth preparations, and because I have been told by this druggist (who is more skilled, I believe, in chemical matters than the majority) that ninety-nine out of a hundred would carry out the test as he did—and so be led to a wrong conclusion; and because we were shown that bismuth will, under the conditions mentioned, form a stain like arsenic or antimony, which stain I have never seen mentioned, although the fact of its formation may be well known.

Of course I did not make any attempt to show what caused the suspicious symptoms in the patient; I was only concerned with the fact that they were not caused by arsenic in the bismuth preparation.

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NEW ORLEANS, LA.

THE GAMBIR OF COMMERCE.

BY CHARLES H. LAWALL.

The replacing of catechu of the 1890 Pharmacopœia by gambir in the U.S.P., 8th Rev., was commented upon favorably by practically every critic of the book when it made its first appearance. Some time afterward dissatisfaction was expressed by certain persons as to the quality of certain commercial specimens, and some difficulty was reported in obtaining it at all in some quarters.

In order to ascertain whether or not these criticisms were justly applied, the writer obtained twelve samples of the drug from various wholesale and importing houses and made comparative examinations in order to obtain an idea as to the quality.

The standard of the U.S.P., 8th Rev., is that " not less than 70 per cent. should be soluble in alcohol, and, when incinerated, it should not yield more than 5 per cent. of ash." These requirements are but slightly different from those for the catechu of the former pharmacopœia, which required not over 6 per cent. of ash, and not more than 15 per cent. residue dried after extraction with alcohol.

There seemed to be no difficulty at all in getting samples and quotations from various sources. The physical appearance of the samples varied greatly; some being in cubes, some in masses taken from the matts in which it is allowed to harden, and some of soft pasty consistency, in glass jars. These latter samples were quite mouldy and in bad condition, and one of the matt samples showed evidence of having been mouldy before it had become dry and hard, and in these samples there was a characteristic musty odor in the tincture and in the aqueous infusion, although in no sense could this odor be classed as objectionable or offensive, a criticism which had been made of some of the market samples.

A comparison of the figures and descriptions in the accompanying table will show that the article as obtained in the form of cubes is fully up to the U.S.P. requirements, and that if samples are purchased possessing the physical characteristics of light color and freedom from mouldiness there need be little fear of not obtaining a satisfactory article.

Of the twelve samples examined, seven were fully up to the U.S.P. requirements, and of the remaining five, three would be rejected by the most inexperienced person on account of inferiority of physical characters.

The unfavorable reports which have emanated concerning the quality of gambir are not warranted by the condition of the article as sold for medicinal purposes, but have probably originated in the confusion of samples which were intended for such crude uses as in boiler compounds and for dyeing and calico printing.

No.	Ash.	Sol. in Alcohol.	Sol. in Water.	Color and Condition of Drugs.
1	3·62	71·20	75·00	Light colored cubes.
2	5·47	64·10	69·00	Dark colored mass.
3	7·35	74·90	77·00	Reddish brown mass.
4	3·84	80·80	79·00	Light colored cubes, white inside.
5	4·13	82·20	76·00	Light colored cubes, white inside.
6	4·03	78·20	66·00	Grayish brown, hard cylindrical rolls.
7	3·59	50·40	40·00	Pasty mass, musty odor, brown color.
8	2·53	44·00	32·00	Yellow pasty mass.
9	3·62	86·60	78·00	Brown colored cubes, yellowish inside.
10	4·40	76·00	78·00	Brown mass, hard, blackish brown.
11	4·96	73·40	70·00	Dark brown cylindrical rolls.
12	6·97	68·80	56·00	Semisolid brown mass.

THE SCOPE AND THE SHORTCOMINGS OF THE NATIONAL FORMULARY.

By M. I. Wilbert.
Apothecary at the German Hospital, Philadelphia, Pa.

The recognition that has been accorded to the National Formulary by the Food and Drugs Act, June 30, 1906, gives to that work an authoritative standing quite different from that intended for it, either by its originators or even the most zealous advocate for its compilation.

To more fully appreciate the object and the proposed uses of the book it would be necessary to review at some length the various discussions at the meetings of the American Pharmaceutical Association, which led up to the publication of the first edition of the National Formulary. For to-day, however, we must content ourselves with a meagre outline of the facts by pointing out the various steps that were actually taken.

So early as 1853 Mr. John Meakin proposed that the Association collect and publish generally acceptable formulas for widely used unofficial preparations, and in 1857, just fifty years ago, such a compilation was published in the volume of the proceedings for that year, as the report of a committee of which Mr. Meakin was chairman.

The project was further discussed, from time to time, and the development of what has become known as "the elixir craze" was the direct incentive for the publication of a collection of formulas, largely for elixirs, in 1873, and the publication of a supplementary compilation in 1875.

In 1883 Mr. J. W. Colcord, of Lynn, Mass., revived the proposition for a more authoritative compilation of generally acceptable formulas that would serve as a guide for the retail pharmacist and thus permit him to make many of the compound pharmaceuticals that he was then buying.

A committee was duly appointed, but little or nothing was accomplished, at least not under the direct auspices of this committee. In the meantime, however, the pharmacists in the larger cities were being literally overwhelmed with proprietary elixirs, made by large as well as small manufacturing concerns and exploited through the medical practitioners.

To eliminate at least a portion of the then existing evil, and to give physicians an opportunity to prescribe without specifying the particular manufacturer, The College of Pharmacy of the City of New York, The Kings County Pharmaceutical Society of Brooklyn and the German Apothecaries' Society of New York appointed a joint committee to compile a collection of formulas for the then widely used non-official preparations.

This committee, under the able leadership of the late Charles Rice, completed its work within a year, and in 1884 published what became known as "The New York and Brooklyn Formulary."

This Formulary, comprising a total of eighty-one formulas, was reprinted in the Volume of the Proceedings of the American Pharmaceutical Association for 1885, and was subsequently accepted as the basis for the National Formulary.

Elaborating on this formulary the committee of the American Pharmaceutical Association published a preliminary report, in 1886, containing 414 formulas, and the first authoritative edition of the National Formulary itself, published in 1888, was still further elaborated and contained 435 formulas.

The second, or revised edition, published in 1895, comprised 454 and the present, third, edition of the book contains 456 formulas in the body of the book and 114 formulas, from previous editions of the Pharmacopœia, in an appendix.

The object of the Formulary, as described by the chairman and the committee having charge of the original compilation, was to gradually include every preparation legitimately belonging to pharmacy which is in professional or popular demand and for which the Pharmacopœia prescribes no standard.

The preface to the first edition also says: "The mission which this work is to fulfil can only be properly accomplished by the co-operation of the medical profession. It is therefore of the greatest importance that the members of this profession, throughout the country, be made acquainted with the existence, contents and objects of this book, and that, if the same be approved by them, as is confidently expected, they will consent to accept the preparations made in accordance with the formulas contained therein, instead of designating any special maker's product."

Despite the fact that the opinions expressed in the above paragraph are self-evidently correct and absolutely indispensable, it has taken twenty years for the retail pharmacist to awaken to a realization of the possibilities involved, in popularizing the National Formulary with physicians, and, perhaps as the consequence of his own oversight, the pharmacist himself is anything but prepared to cope with the difficulties that will present themselves in this proposed propaganda.

Retail druggists in all parts of the country are taking up the work of popularizing U.S.P. and N.F. preparations with physicians, and forgetting entirely that they have not been closely in touch with the advance guard in the science of medicine, they are making, and will continue to make, serious mistakes that will hamper rather than aid the progress of rational therapeutics.

In this connection we must not lose sight of the fact that even the Pharmacopœia of the United States, elaborate and comprehensive as that work really is, is not above reproach and has, in fact, been criticised severely.

With the National Formulary, however, in addition to the natural shortcomings and errors usually evidenced in works of this kind, we must also contend with the fact that the compilation itself largely reflects but an ephemeral survival, or at best a revival, of empiric practices that are not at all compatible with real science and progress.

A very fair proportion of the formulas contained in the National Formulary are representative of the poly-pharmacy of bygone centuries and have no legitimate reasons for existence at the present time. This, too, is quite irrespective of the fact whether or not they are the present-day survivals of old-time patent medicines or are the admitted imitations of the equally objectionable, pleasant-tasting, alcoholic, and "ethical" proprietaries of to-day.

It has been asserted, and on very good authority, that a fairly large proportion of the elixirs, essences, cure-alls and tonics, exploited through the medical profession at the present time, really find their greatest sale in the demands direct from the laity.

That these insidiously attractive alcoholic preparations do reach the public directly is evidenced by the price-list of any one of the well-known patent medicine venders and also by the displays made in the windows of cut-rate drug stores. There can be no doubt that the alcohol habit, among a class of individuals who would not think of consuming it in the form of wine or distilled spirit, or even in the form of Peruna or Hostetter's Bitters, has been developed and is being continued by the use of one or the other well-known "ethical" proprietary first prescribed by well-known and reputable physicians.

Take, for instance, the compounds of pepsin and pancreatin, of which the Council on Pharmacy and Chemistry, in a recent report (*Journal American Medical Association*, February 9, 1907) enumerated no less than thirty preparations exploited by thirteen of the leading manufacturing concerns of the country. It has been demonstrated that these preparations must be inert so far as their proteolytic action is concerned, and still they have been in use, and are even to-day in use, with apparent good effect, in various gastric disturbances. The National Formulary includes formulas, and quite a number of them, for preparations equally objectionable as those enumerated in the report of the Council, and in fact one of these formulas, that for the Digestive Elixir, was mentioned in the report, and its deletion from the pages of the National Formulary was recommended.

It is generally well known that even the simple mixtures of pepsin with alcohol and aromatics become inert on keeping, and proprietary preparations, even those containing but a comparatively small percentage of alcohol, that have been kept on hand for a long period of time must be unreliable so far as their proteolytic action is concerned.

Dr. Torald Sollman (*Journal American Medical Association*, February 2 and 9, 1907, pages 415 and 521), points out that the digestive ferments, in the stomach, are but seldom deficient and are practically never entirely absent. He further says, "The popularity of certain proprietary compounds must be attributed solely to their seductive taste and appearance."

In an editorial notice on "Antidyspeptics and Vehicles" (*Journal American Medical Association*, March 23, 1907, page 1046), the writer says:—

"Alcohol has a stimulating action on the functions of the stomach, and, especially in the form of wine, will often relieve the uncomfortable feelings that come on after eating, and herein lies one of the principal reasons for the popularity of mixtures containing alcohol."

What is said of the mixtures of pepsin and pancreatin, or the alcohol-containing preparations of the digestive ferments, applies equally well to a host of other alcohol-containing aromatic compounds that are and have been exploited as panaceas for this, that and the other affliction, and for many of which the National Formulary, unfortunately, contains equivalent formulas.

It is true that one of the objects of the National Formulary is to combat the rapid increase in the number of proprietary mixtures that are being exploited through the medical profession; but, the more important feature, that of having the active ingredients in these mixtures, be it alcohol or other drug, properly recognized and acknowledged, should not be lost sight of, either by the pharmacist or the physician.

In attempting to bring the use of National Formulary preparations to the attention of physicians, the pharmacist is but doing a duty that he owes to himself and to his customers, or, more properly speaking, to the public at large. Before entering on this admittedly necessary and in many respects promising propaganda, however, the pharmacist should acquaint himself with the work that is now being done in connection with the American Medical Association and should also know something of the corresponding work that has been undertaken by the British Medical Association, the German Apothecaries' Society, the Swiss Pharmaceutical Society and the Pharmaceutical Society of Paris.

Even a most cursory knowledge of this work that is being carried on in various parts of the world will be of advantage; in that it demonstrates that the use of nostrums and semi-secret proprietaries is not confined to the physicians of this country, although, perhaps, it is more apparent and more widespread here than abroad.

Whatever the use for this widespread use of proprietaries in our country may be, it must be apparent to all that the more evident the abuse the more difficult it will be to correct or eliminate it.

Formulas like those embodied in the National Formulary can and will contribute much to limit the continued use of nostrums; they constitute, however, but a means for reform and should not be mistaken for reform itself. Whether or not formulas that are specifically designed to controvert the use of complex semi-secret preparations should be included in a book that has been dignified as a legal authority, is a question that will readily admit of a wide variance of opinion and is the question that more directly suggests the need for a more careful consideration of the shortcomings of the present edition of the National Formulary.

Legally the National Formulary is the equal, as a standard in Interstate Commerce, to the Pharmacopœia, and it can no longer be said to be "unofficial." Being legally official, the question of revising, changing, adding to or eliminating from its pages becomes a matter of greater and more serious consideration. Pharmacists in all parts of the country appear to be awakening to the possibility of complications that may and no doubt will arise out of the various errors of omission and commission to be found in the present edition of the book.

Without going greatly into detail, it may be permissible to point out some of the more apparent shortcomings of the book as they appear to a casual observer.

The use of alternative weights and measures may be pointed to as one of the most unfortunate features of the edition of the National Formulary. The use of exact alternative quantities would have been ridiculous and absolutely worthless, while the use of approximate quantities, as adopted in the National Formulary, robs the book of that conciseness and appearance of accuracy that should dominate an authoritative book of official formulas. In this particular instance it has also been the cause of more evident and glaring errata than all of the other features put together.

The inclusion of such a large number of complex formulas is also to be regretted. Fully 30 per cent. of the formulas in the present edition should not be dignified by being included in a work of this kind, and it is to be desired that in future revisions a very large number of these preparations will be omitted.

The introduction of saccharin, as a sweetening agent, is a matter on which there may exist a difference of opinion. In view of the fact, however, that its use in foodstuffs is being discouraged there would appear to be little or no excuse for introducing it purely as a sweetening agent in medicinal preparations. This substance appears to have been added quite regardless of actual necessity, largely because it has been and perhaps is still being used by manufacturing pharmacists. In at least two of the preparations, Elixir catharticum compositum and Elixir gentianae glycerinatum, it is directed in proportions that are not alone unpractical but positively nauseating. Even when reduced to one-tenth the amount, particularly in the cathartic elixir, it is still unpleasantly prominent.

The possible errors that arise out of attempts at unduly simplifying formulas is well illustrated by the formula for Liquor ferri peptonati cum mangano. This formula directs that commercial ferric peptonate be used. This substance at best is variable, is unstable and, as usually met with, is decomposed and unfit for use. Commercial manganese peptonate, suggested in the alternative formula, is even more unsatisfactory than the ferric peptonate.

In this connection it appears to be unfortunate indeed that the committee did not include the widely used formula by Dietrich, or the very simple formula suggested by Mr. Dunning in the Proceedings of the American Pharmaceutical Association for 1905 (p. 397).

One rather peculiar complication that has arisen recently is the ruling by the Department of Agriculture that the formulas included in the appendix do not constitute an integral part of the book. As under the strict letter of the law the pharmacopœias from which these formulas were taken are also not included in the law, and as the use of such formulas, or rather the use of the preparations made according to the formulas, is rather widespread, it would appear that in this particular instance the ruling by the department is not a very wise one and would probably be reconsidered if the attention of the officials were called to it.

In conclusion I would like to say that whatever the future may have in store for the National Formulary, the complications that have arisen out of its recognition by the Food and Drugs Act have had a beneficent effect on the practice of pharmacy. Pharmacists in all parts of the country are evidencing a healthy interest in the content and the scope of the National Formulary. The criticisms that have been published in pharmaceutical journals, and the discussions that have taken place at meetings of local branches of the American Pharmaceutical Association, and at other meetings of pharmacists, all evidence an honest and a sincere desire to improve the formulas and to make the book itself second to none as an authority and guide in the making of preparations not properly included in the National Pharmacopœia.

HISTORY AND USES OF SOAP IN PHARMACY AND MEDICINE.[1]

By William C. Alpers.

History does not record the name of the inventor of soap, and it is likely that none ever existed. The accidental combination of the potash in wood ashes with an animal fat probably happened wherever nomads roamed through the countries; but the resulting product was valued little and played no part in their primitive households. In the old sacred records the word "soap" is mentioned twice, once in the book of Jeremiah, and once in Malachi. But it refers probably to the juice of a plant that was then, as well as centuries later, used by the dyers of woolens. Nor did the old Greeks know soap. Homer, who gives us minute accounts of domestic life and customs, does not mention the word, nor has any mention been made of it in the discovered records of the Assyrians and Egyptians. Soap was also an unknown thing in Chinese civilization, which has flourished to a high degree for thousands of years in spite of Baron Liebig, who says that the state of a nation's civilization is indicated by its consumption of soap. Speaking of past periods we can only ask the question: "What substitutes did the old Chinese use for soap?" There was, in the first instance, the native soda from the north of China and Tibet, called *kien* in Chinese, for which reason European soap is now called *fan-kien,* i. e., "foreign soap." The old Chinese further used a preparation called *fei-tsau-to,* made from the pods of the Acacia concinna. Finally rice water was used in cleaning clothes.

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[1] Read before the New York Section of the Society of Chemical Industry, April, 1906.

The first authentic mention of soap is found in the works of Pliny the Elder, who speaks in a scientific way of a remedy for tumors made from ashes and oil. At another place he describes a process for the preparation of soap, differing but little from that pursued at the present day, and ascribes its invention to the Gauls, who made it from tallow and beechwood ashes, and used it to make their hair blond. He also makes mention of a hard and a soft soap. The remnants of a fairly well equipped soap factory have been unearthed in Pompeii, containing pieces of soap in perfect condition, although more than seventeen hundred years old. As Pliny died in 97 A.D. at the eruption of Vesuvius, a victim of his desire to study the phenomenon more closely, we may infer that soap was used by the Romans in the last two or three centuries before Christ. From this early time but little progress, if any at all, was made in its preparation. The Middle Ages with their discouragement of original thought were not productive of new inventions, and we at once pass to the first part of the last century when a new impulse was given to soap manufacture by the investigations of Chevreul. After this scientist had determined the chemical properties of soap and shown that it was the salt of an alkali and a fatty acid, industrial enterprise seized this article and soon brought it to its present form of perfection.

Pharmacy and medicine paid but little attention to these alkaline soaps, although in all pharmacopœias of the last century hard and soft soaps are mentioned, and methods for their preparation given. The Materia Medica of the Massachusetts Medical College in 1808 speaks of Sapo, soap, prepared with oil of olive and soda, called Castile soap. The first American Pharmacopœia mentions simply: Sapo, Castile soap, or Sapo hispanicus. A later edition in 1831 speaks of Sapo, soap, soap prepared from soda and olive oil, and of Sapo vulgaris, common soap, prepared from soda and animal oil.

Not till 1880 is soft soap official in our Pharmacopœia, which, besides olive-oil soap, speaks of Sapo viridis, green soap, soap prepared from potash and fixed oils, and describes it "as a soft, greenish-yellow, unctuous jelly."

In the British Pharmacopœia hard and soft soaps are both official as early as 1818, where we read of:

> Sapo durus—soap from soda and olive oil, and
> Sapo mollis—soap from potash and various oils.

The French codex as far back as 1748 mentions a number of soaps, viz :

Sapo albus, ordinary soap,
Sapo variegatus, and
Sapo hispanicus.
Later on a Sapo albus, made of almond oil, is mentioned.

In various pharmaceutical works a turpentine soap is mentioned (about 1818), made of potassium carbonate, oil of turpentine, and rosin ; and Henry and Guibert, in their "Traité de Pharmacie," in 1818, mention a soap made of beef marrow and soda.

The German Pharmacopœia, for more than a century, speaks of:

Sapo domesticus,
Sapo medicatus, a white powder ;
Sapo oleaceous (Castile soap),
Sapo terebinthinatus, and
Sapo viridis or Kalinus.

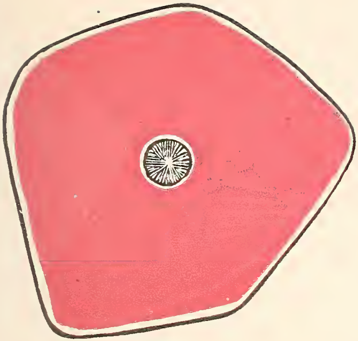
The principal use of all these soaps, however, as far as medicine is concerned, was the administration of various medicaments in pill form, and soap was probably the most favored excipient for making pills. Opium, squills, sodium bicarbonate, aloes, myrrh, iron, various mercury compounds, and others, were made into pills by the aid of soap, and in the Pharmacopœia of 1830 we also find a pill called, officially, Compound Pill of Soap, and containing ½ grain of opium and 2 grains of soap in each pill. This is a harmless name for so powerful a pill, which, however, was dropped in 1880. Up to this time medicine had no other use for soap except as a general hygienic agent.

These remarks relate to soap only in so far as the word is understood by the layman, that is, a soluble compound of an alkali and a fatty acid. Chemically, however, we also have insoluble soap, that is, salts of fatty acids with other metals, and these salts, or at least one of them, have been used in medicine for many centuries. This is the lead salt of oleic and palmitic acids, generally called lead plaster. As far back as 1653, in a book on Materia Medica, by Nicholas Culpepper, in London, the author describes a lead plaster under the name of Diachylon Simplex. This description begins as follows: "Let the Letharge boil with the Oyl of Olive and Hogs grease a long time, continually stirring it with the branch of a Palm or other tree of a binding nature, as Oak, Box or Medlar, which is new cut, that the vertue of the Spatula may be mixed with the Plaister, etc." Those who have access to medical books of still older dates will probably find in them similar descriptions. This lead soap, or plaster, as it was generally called, entered into all pharmacopœias and will probably remain official as long as medicaments are used. The method of making it is based on the same principle and does not differ materially in the various countries; litharge, olive oil and water are boiled till saponification takes place. The lead plaster forms the base of a number of other plasters and is often mixed with a soluble soap; for instance, in a London Pharmacopœia of 1720, a soap plaster is described, consisting of hard soap and lead plaster.

When the manufacture of soap became a prominent industry, additions of various natures were made, first to impart an agreeable odor and make the soap more attractive and desirable as a toilet article; but soon other ingredients were added with a view of giving it medicinal virtues. These so-called medicinal soaps, containing various medicaments that were otherwise applied in the form of ointments or plasters, as sulphur, tar, carbolic acid, etc., were in the beginning a strictly commercial enterprise, until two German dermatologists, Dr. Unna, of Hamburg, and Dr. Eickhoff, of Elberfeld, took this matter up in 1885 and created medicinal soaps on strictly scientific principles. Both wrote a series of articles recommending soaps in place of plasters and setting forth their advantages very eloquently. These advantages consist in the fact that soaps, as compared with plasters, are less troublesome, more effective, cleaner and less disagreeable, absolutely harmless and less expensive. Four different methods of application are recommended by these dermatologists, viz., simple washing; rubbing dry the applied foam with woolen cloths; allowing the foam to dry on the skin; and, finally, retaining the applied foam by means of water-tight dressings. The third method, the drying of the foam on the skin, is the most usual one. While, therefore, the soaps thus applied will also exercise their cleansing properties, they are principally used as plasters, and if we call the lead plaster an insoluble soap, we may just as well call these medicated soaps soluble plasters. Both Drs. Unna and Eickhoff lay great stress on the necessity of preparing a good soap-stock to which the medication is added. They reject the cocoanut-oil soap, which is largely used as a fine toilet soap, on account of its foaming properties, and state that nine-tenths of the skin diseases, as chapped hands, roughness, sensitiveness, etc., are caused by the use of such soaps. In connection with this statement the question might arise in this country if the composition of domestic and toilet soaps might not be a good subject for the attention of our friend Dr. Wiley, and if under the present Food and Drug Law a definition of "soap" as a hygienic agent might not be expected from the chemical autocrat in Washington. The soap that Dr. Eickhoff recommended as the best stock for medicinal soap consists of ¾ parts of beef tallow and ¼ olive oil, saponified with soda lye to a neutral soap. To this stock-soap a 5 per cent. mixture, consisting of 2 per cent. of lanolin and 3 per cent. olive oil, is added, in order to produce a superfatted soap, which is claimed to be far superior to neutral soap for medicinal purposes. A long list of medicinal soaps is prepared by various additions according to the kind of skin diseases for which they are used, as resorcin, salicylic acid, quinine, hydroxylamine, iodoform, kreolin, ergotin, iodine, menthol, salol, aristol, mercury compounds, etc.

The claim that superfatted soaps are more beneficial to the skin than neutral soaps, is a question the solution of which we must leave to the dermatologist; it may suffice to say that opposing views have been taken by many physicians who do not endorse this claim, on account of the want of stability of such soap and because of the free fatty acids that they contain which are said to be deleterious to the skin.

Soon after the investigations of Chevreul, efforts were also made to form soaps of other metals, and mercury, zinc and calcium soaps were prepared with more or less success. A drawback in their manufacture was the somewhat uncertain and varying composition of the various fats, and it was natural that the idea was conceived to first separate the fatty acids and then use the pure acid—oleic, palmitic, or stearic acid—to form soap. Prof. John Marshall, as early as 1872, proposed a combination of oleic acid with freshly precipitated oxides or alkaloids. However, he did not produce definite chemical compounds, but made solutions of such oleates in a large excess of oleic acid. Preparations of this kind were received with much favor by the medical profession, and in 1890 three of them found their way into the Pharmacopœia, viz., the oleates of mercury, zinc and veratrine. In the last edition the zinc compound is again dropped, but atropia, cocaine, and quinine added. The per-



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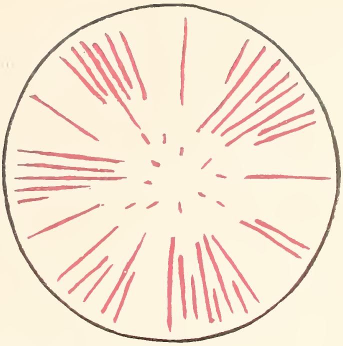

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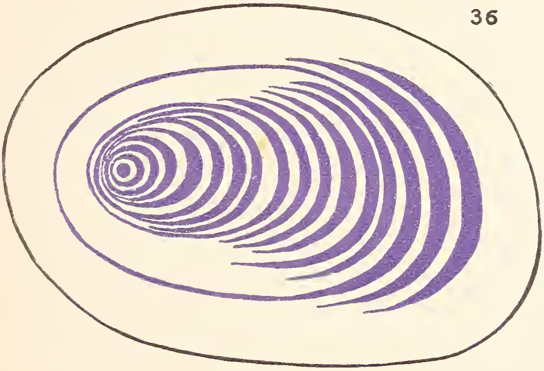

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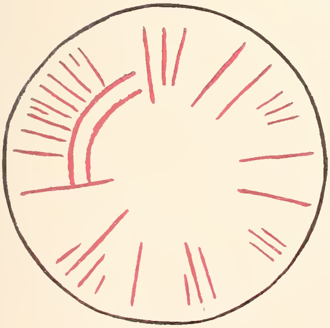

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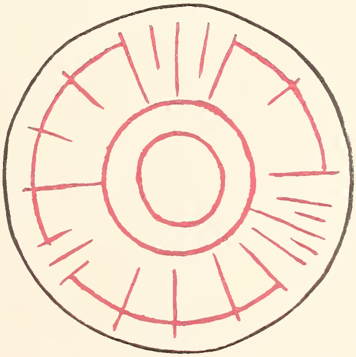

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Fig. 35. Corn starch grain treated with weak aqueous solution of safranin.

Fig. 37. Potato starch grain treated with weak aqueous solution of gentian-violet.

Figs. 36, 38, 39. Wheat starch grains treated with weak aqueous solution of safranin.

centages of oxides and alkaloids vary from 2 to 25 per cent., and the name Oleate is adopted for the preparation.

This is greatly to be regretted; for, as stated before, these preparations are not definite chemical oleates, but mixtures or solutions of oleates in oleic acid and olive oil. On the other hand, a stearic acid soap, viz., zinc stearate, is described as a definite chemical compound, forming a fine white powder, but no method for its manufacture given.

It is not unlikely that soaps of definite composition as to the various fatty acids will receive more attention in the future; for the use of soap as base in place of ointment seems to gain favor from day to day, so that in the next edition of our Pharmacopœia we may expect to see real oleates, and possibly solutions of oleates, in various fatty acids or oils.

THE STRUCTURE OF THE STARCH GRAIN.[1]

FIRST PAPER.[2]

BY HENRY KRAEMER.

There have been a number of hypotheses advanced to explain the origin, nature, and structure of the starch grain. (1) It was originally considered to be a bubble filled with a liquid, or, as stated by Nägeli, "eine mit Flüssigkeit gefüllte Blase." According to Von Mohl, Raspail considered that the starch grain consists "aus einer in Wasser unlöslichen blasenförmigen Hülle und einem löslichen gummiartigen Inhalte." (2) Then (1834) it was considered that to a central or excentral point, layer after layer was added, the peripheral layers thus being the last formed, this view having been advanced by Fritsche (1) and supported in a more or less modified form by Treviranus (2), Lindley (3), Schleiden (4), Braun (5), Schacht (6), Crüger (7), und Unger (8). (3) Payen (9) in 1838 conceived the idea that growth took place from the outside, that through one or more funnel-like openings at the periphery of the grain new substances entered and new layers were formed therefrom, the outer layers thus being the oldest, in contradistinction to the view advanced by Fritsche. (4) Then followed a series of contributions in which the growth of the starch grain was likened to that of the cell wall and the formation of cells. This theory, with certain modifications, was advocated by Münster (10), Walpers (11), Reissek (12), C. Nägeli (13), Kützing (14), and Hartig (15). (5) While Nägeli (16) recognized that assimilation starch arose in plastids, he considered that most starch grains arose free in the cell sap under the influence of living protoplasm, and it was not until 1880 that Schimper (17) demonstrated that all starch grains develop within plastids and that in the case of reserve starch grains the leucoplastids finally disappear. Schimper further showed that the outer portion of the grain is the youngest, and thus substantiated the view of Fritsche concerning its development.

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[1] Reprinted from the *Botanical Gazette*, Vol. xxxiv, November, 1902. Since the publication of the author's papers on the starch grain, there have been sufficient inquiries on the subject to warrant republishing them at this time, particularly a these inquiries have come from those interested in the practical as well as the scientific side of the subject.—EDITOR.

[2] An abstract of a preliminary paper on this subject was presented to the Society for Plant Morphology and Physiology, December, 1899.

If we consult any of the standard works on organic chemistry, we find that the formula which is generally accepted for starch is $n\,(C_6H_{10}O_5)$, this being the formula recognized by Pfeffer, Tollens, and Mylius. It is supposed that the molecular composition is quite complex, the grain being composed of different single groups of $C_6H_{10}O_5$ or multiples of the same. While this formula may be accepted in a general way, still it has been shown that there are at least two substances which enter into the composition of the starch grain. Nägeli (16) has shown that the starch grain consists of two different substances, one which is soluble in ferments, and called by him granulose, and another which is insoluble in saliva, and called by him starch cellulose. He showed that when the starch grain was deprived of its water the lamellae were not apparent, and therefore he concluded that the layering was due to a difference in the amount of water present in the different lamellae. This view has given rise to the formula suggested by W. Nägeli (18) for the starch grain, which is $6C_6H_{10}O_5 + H_2O$, or $C_{36}H_{62}O_{31}$. Maschke (25) considered that the starch grain consisted of alternate layers of cellulose between which starch substance was deposited in two modifications, one soluble in water forming the light-colored lamellae, and another insoluble in water forming the dark layers. This view was not adopted, however, and Nägeli's theory prevailed until 1886, when Arthur Meyer (19) demonstrated that the substance termed cellulose by Nägeli, and which was termed "farinose" by Von Mohl (20), gave reactions similar to artificially prepared crystals of amylodextrin. In 1895 Meyer (21) further considered the composition of the starch grain and stated that it is made up of (1) α–amylose, (2) β–amylose, and (3) amylodextrin, a decomposition product of amylose. He also expressed the opinion that inasmuch as there is an anhydride of dextrose which does not readily take up water, there is probably also an anhydride of amylose which even on boiling with water is hydrated with difficulty, and that this is the substance that has given rise to the belief that there is present a starch cellulose. This latter term, according to Meyer, has been used for a number of different substances: (1) mixtures of amylodextrin and α–amylose; (2) solutions of α–amylose and β–amylose; (3) solutions of β–amylose with various other substances, as nitrogen-holding substances, impure fatty products, pure amylodextrin, and the walls of plant cells which are contained in commercial starches unless carefully purified. He obtained the α–amylose upon treating starch paste (Stärkekleister) with malt solutions (Malzauszug) and by the action of hot dilute solutions of hydrochloric acid upon the whole starch grain. The portion remaining (β–amylose) is distinguished from the portion dissolved in that it is not soluble in water and becomes slightly reddish, and not blue with iodine.

One of the earliest views in regard to the development ot the starch grain was that new layers were added to those previously formed, these being separated from each other by layers of air which were later called "Adhäsionsflächen," "Contactflächen," and "Grenzflächen" by Dippel (22), Strasburger (23), and Krabbe (24), respectively. These terms, however, have been mostly used by these authors in describing the structure of cell walls. In 1858 Nägeli (16) advanced the theory that the starch grain consists of elementary particles, later termed by him "micellae," which he supposed to have the form of parallelopipedal prisms with rectangular or rhomboid bases. Furthermore, according to Nägeli, these micellæ possess a watery film, are embedded in a mother liquor which differs from them in composition, and are held together by certain forces. The growth of the starch grain is effected by the interpolation of new material among the particles already formed, this new substance being utilized in part in increasing the size of the micellae already formed, and also in forming new micellae, which develop and arrange themselves according to the laws which the micellae previously formed have obeyed. This theory is known as the "intersusception theory," while the earlier one is spoken of as the "apposition theory." In addition to these two views in regard to the structure of the starch grain, Schimper (17) considered that it is made up of sphere-crystals which he called "Sphārokrystalloide." Meyer (21) has enlarged upon this view and considers the starch grain to be made up of two kinds of acicular crystals, which he calls "Trichiten," these being composed of α amylose and β-amylose, there being also present in the grains that are colored red with iodine, amylodextrin and dextrin. He further says that most starch grains consist altogether or nearly so of amylose, and that these are colored blue with iodine. These latter starch grains are made up of sphere crystals of amylose, arranged in layers, and these layers may consist of crystals of either α-amylose or β amylose, or both, some starch grains containing in addition, as already stated, large amounts of amylodextrin and dextrin.

Starch grains are distinguished from one another by the following particulars: (1) The origin in the plant; (2) the shape of the grain; (3) the size of the grain; (4) the position of the point of origin of growth;[1] (5) the shape of the point of origin of growth; (6) distinctness of lamellae; (7) the direction of the lamellae; (8) behavior toward dilute iodine solutions; (9) the temperature at which the "Kleister" or paste is formed and its consistency; (10) the behavior towards various reagents, as chromic acid, calcium nitrate, chlor-zinc-iodide, sulphuric acid, diastase, etc.; (11) the appearance as viewed by polarized light. These differences in starch grains not only from different sources, but even in those of the same origin, tend to show that instead of starch being a uniform substance, it is made up of several substances, these occurring in varying proportions but appearing to be more or less definitely arranged.

The author may briefly state that he conceives the reserve starch grain to be the direct product of the polymerization of soluble carbohydrates of either the glucose or cane-sugar group, together with the abstraction of water. This process is carried on under the influence of an organized body—either cytoplasm, or a plastid, or both. The products thus formed consist of two crystalloidal substances, namely, starch cellulose[1] and granulose, and also a colloidal substance. These occur as follows: (*a*) In the point of origin of growth we find the colloidal substance associated with a small proportion of cellulose as also in the alternate lamellae; (*b*) in the other layers occurs the granulose associated with a small amount of colloidal substance and possibly also some cellulose; (*c*) the peripheral layer of the grain is not readily acted upon by reagents and is quite elastic and more or less porous, probably consisting of an anhydride of cellulose; (*d*) in some cases some of the dextrins or some of the non-colloidal or crystalline carbohydrates, as maltose, dextrose, levulose, etc., may be present, but these are probably formed as a result of alterations taking place in the grain.

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[1] The terms "hilum" and "nucleus" have been employed to distinguish the central or excentral marking, around which the lamellae or layers of the grain are arranged. These terms, however, are open to criticism, inasmuch as they are employed for other and specific purposes. The expression "point of origin of growth" seems to be better on account of its being less confusing, and is moreover descriptive and accurate.

There have been a number of important contributions on the subject of the origin and structure of the starch grain, and while the views of the authors appear to be more or less at variance, still this is not to be wondered at, and it is highly probable that future observations will harmonize some of these conflicting views.

The illustrations of potato starch grains in the different textbooks show two kinds of grains, one in which the point of the origin of growth and alternate lamellae are light in color, as figured by Sachs (26); and another in which the corresponding parts are dark in color, as figured by Strasburger (27). There is in reality no difference in these grains, this apparent difference being due to the manner of focusing upon them (*figs. 1, 2*), that is, whether viewing the lamellae from above or from below, or, as the Germans would say, by "tiefe oder hohe Einstellung." The two views of the successive lamellae thus obtained may be compared to the appearances obtained with two entirely different substances, the one corresponding to a more or less definite body, as an oil globule, and the other to a body such as an air bubble (or vesicle filled with air or any other gaseous or rarefied material). The appearance as observed in the oil globule corresponds to that of the layer next to the point of origin of growth and the layers alternating with it. The appearance of the air bubble corresponds to that of the point of origin of growth and the layers alternating with it. There is this difference, however, that instead of the purplish hue so characteristic of the air bubble, there is a reddish field in the starch grain which may be taken as indicating that it is of an entirely different composition. A possible explanation of this phenomenon may be that in the air bubble the violet rays, owing to their length and velocity, completely overshadow the red rays; whereas in the starch grain the layers containing other substances offer a resistance to and refract the violet rays and leave the red only in view. As a result of this physical examination of the grain we observe that the successive layers differ in density, and that these correspond to the "water-poor" and "water-rich" lamellae described by Nägeli (16).

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[1] Cellulose was a term first applied by Nägeli (16) and corresponds to the farinose of Von Mohl (20) and probably to the β-amylose of Arthur Meyer (21). Granulose, another term which is generally accepted to have been coined by Nägeli (16), was adopted by Von Mohl (20) and apparently corresponds to the α-amylose of Arthur Meyer (21).

We further find in some of the potato starch grains that at the periphery of the point of origin of growth, as well as upon the inside of one or more of the layers corresponding to it, there is a dark line much resembling the peripheral layer of the grain (*fig. 3*). This probably led Dippel (22), Strasburger (23), and Krabbe (24), to consider that the lamellae did not differ in character, but that this appearance of lamellation was due to lines of contact, as already stated. Krabbe in the chapter dealing on the "Spiralstreifung der Bastfasern" further distinguishes between "Grenzflächen" and "Contactflächen." He says: "Wo Schichten mit derselben Streifung, jedoch mit verschiedener Steilheit derselben, vorliegen, da wird ihre gegenseitige Abgrenzung dadurch noch deutlicher, dass die Grenzflächen der Spiralbänder in der Contactfläche der Schichten nicht immer aufeinander stossen."

A further evidence that there is a marked difference in the layers of the grain is the effect produced by staining reagents (29, 30). On treating starch grains with weak aqueous solutions of safranin and gentian violet,[1] it is observed that certain parts of the grain take up these stains more readily than others. The gentian violet stain is more pronounced in its effect upon the potato starch grain (*fig. 37*), it being held by the point of origin of growth and the lamellae alternating with it. Safranin, on the other hand, is a better differential stain for wheat starch grains (*figs. 36, 38, 39*), being held in certain of the lamellae (usually not more than three or four of them being affected) and in numerous radial clefts or channels. Corn starch (*fig. 35*) does not appear to take up these stains as readily as either wheat starch or potato starch, and there is no differentiation of the lamellae. This is probably due to the per-

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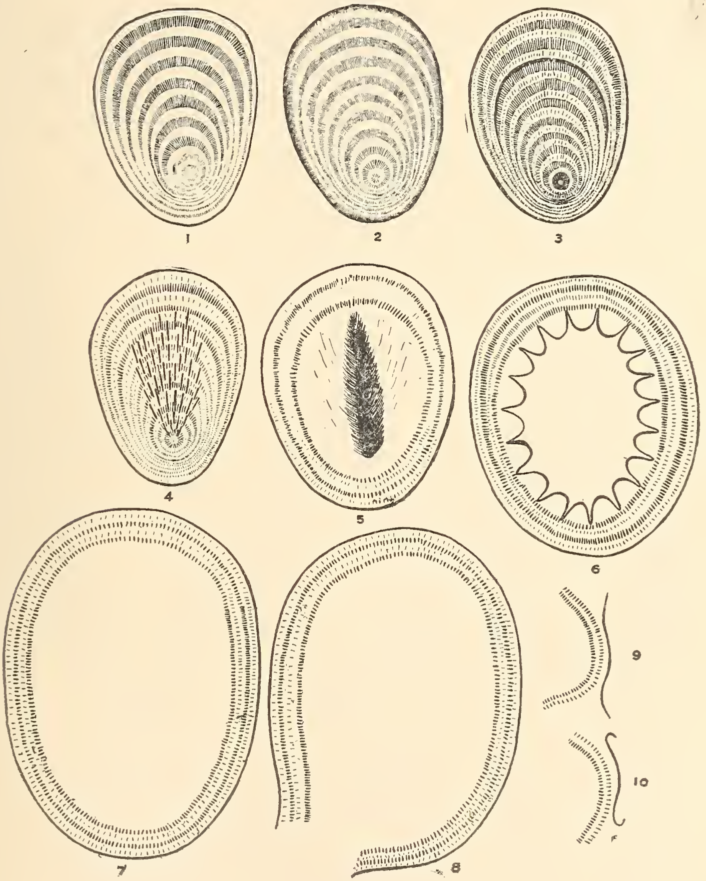
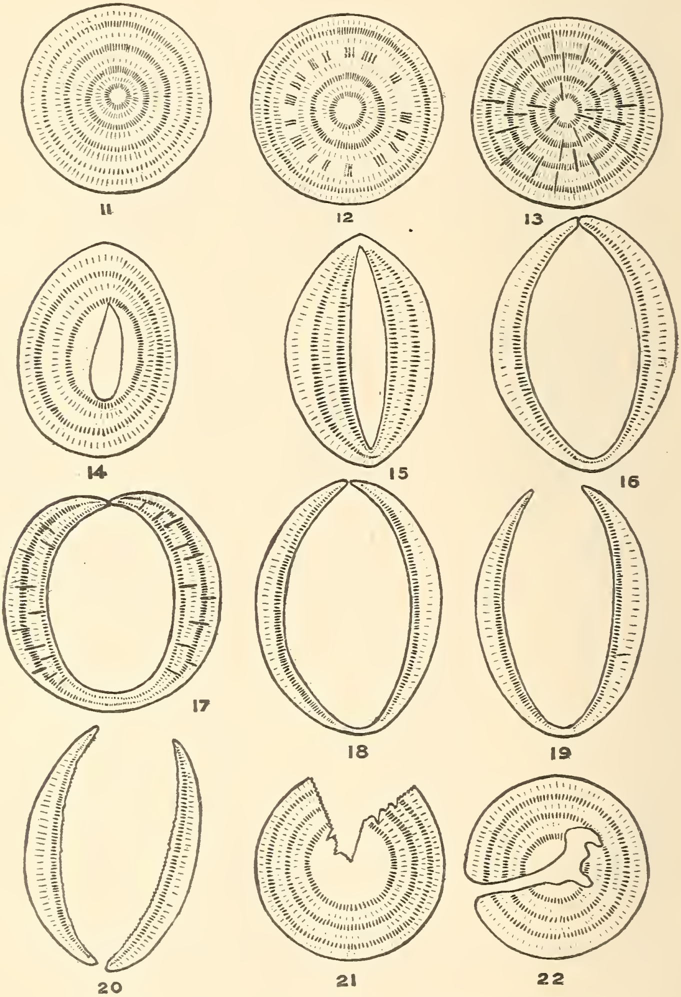
[1] The method used by the author consisted simply in treating the freshly isolated starch grains, or the commercial starches, with weak aniline dye solutions and allowing them to dry at an ordinary room temperature.



FIGS. 1–10.—Potato starch grains, showing the effect of chromic acid solution or other reagents.

ipheral layers being denser and less permeable. Salter (28) in speaking of the staining of the grain says that it is dependent upon the absorption of the anilin dye, and that in no case does the dye seem to have a selective or specific action on the layers. The figures of Salter, however, show that the stain is taken up by certain



FIGS. 11–22.—Wheat starch grains; *11–20*, showing the effect of chromic acid and other swelling reagents; *21–22*, showing a direct disintegration of the grains through the action of ferments.

parts of the grain more than others, and in another place he states that "die Lamellen die im frischen Stärkekorn als dunklere Linien erscheinen, sind diejenigen welche den Farbstoff am reichlichsten einsaugen." In speaking of Meyer's work he goes on to say: "Meyer erwähnt, dass bei der Färbung mit Methylviolet der Farbstoff besonders von den weicheren Lamellen beibehalten wird." The only unfortunate thing is that we do not know to what layers these authors refer when they speak of "weicheren Lamellen" and lamellae with "dunklere Linien." There seems to be no doubt, however, that what they have in mind corresponds to my own observations, that is, it is the layers which are colloidal in character which take up the stains; in other words, the point of origin of growth and the layers alternating with it.

Another interesting feature serving to differentiate the layers of the starch grain is the behavior toward dilute iodine solutions. The layers which are not affected by the aniline stains become blue with iodine, the alternate layers and the point of origin of growth remaining unaffected. The layers thus affected by iodine are the ones which are rich in granulose and are more clearly defined in the grains of potato and wheat starch than in corn starch. These layers become crystalloidal in character on treatment with water at 60° or 65° C. for about an hour, and also with chromic acid, calcium nitrate, saliva, and other reagents.[1]

The behavior of potato starch toward these reagents may be briefly summarized as follows (*figs. 1–10*): The first effect of the reagent is to make the lamellae more distinct (*figs. 1–2*); this is followed by the development of the crystalloidal character of the lamellae (*fig. 3*), which is most pronounced in those colored blue with iodine; this is followed by the production of small clefts or channels (*fig. 4*) connecting the contiguous lamellae, particularly in the middle of the grain; succeeding this there is the formation of channels which are larger and plume-like in appearance (*fig. 5*), the grain meanwhile swelling quite perceptibly, the middle portion becoming clearer and assuming a zigzag outline (*fig. 6*), between which and the periphery of the grain a number of crystalloidal lamellae arise (*fig. 7*); the grain now becomes spherical and marked by a number of concentric lamellae near the periphery; the latter finally ruptures (*fig. 8*) and then follows a gradual solution of the grain, the peripheral layer sometimes recurving like the cutin layer of an epidermal cell on treatment with sulphuric acid (*figs. 9, 10*).

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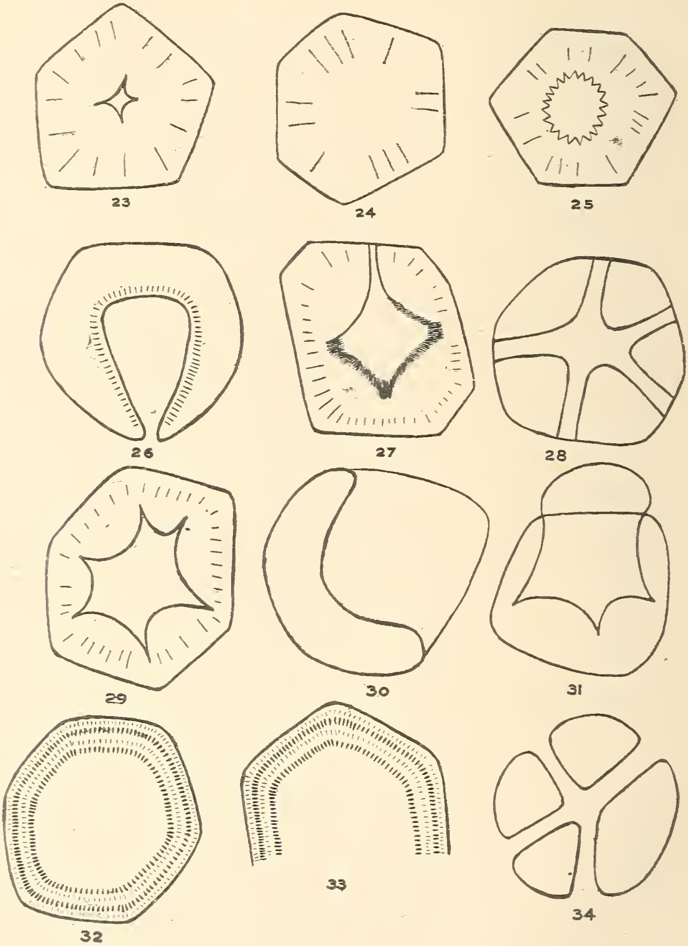
[1] Proc. Acad. Nat. Sci. Philadelphia 53: 450. 1901.



FIGS. 23–34.—Corn starch grains, showing the effect of chromic acid and other swelling reagents.

In wheat starch (*figs. 11–22*) the development of the crystalloidal character of the lamellae (*figs. 11, 12*) is followed by the formation of narrow, interrupted or continuous, radial channels near the periphery of the grain (*fig. 13*), which are sometimes connected with lamellae occurring near the middle of the grain; the grain meanwhile swells quite perceptibly, the centre becomes clearer (*fig. 14*), the contents are crowded into crescent-shaped halves which are still slightly connected at the poles (*figs. 15–17*); the contents of each of the halves of the grain consist of crystalloidal lamellae in which are then produced small clefts or channels connecting the contiguous lamellae (*fig. 17*); the halves in some instances finally separate and slowly dissolve (*figs. 18–20*). In some cases, on the other hand, there is a corrosion of the grain at the periphery, followed by gradual disintegration without the separation into halves (*figs. 21, 22*).

The first effect of reagents upon the corn starch grain (*figs. 23–34*) is to bring out the point of origin of growth (*fig. 23*), the latter becomes larger and in some cases more or less zigzag (*fig. 25*) in outline; between this and the periphery of the grain arise more or less interrupted or continuous radial channels (usually the latter); the crystalloidal structure of this grain develops slowly and is most pronounced when the grain has swollen to two or three times its normal size; at this stage we find that the centre of the grain has become clear and the point of origin of growth has become obliterated in some cases (*fig. 24*), and between it and the periphery occur numerous crystalloidal lamellae similar to those observed in the potato starch; finally the peripheral layer ruptures and there is gradual disintegration of the grain (*figs. 26, 30, 33*). Sometimes the grain appears to separate into as many parts as there were arms to the point of origin of growth (*figs. 27, 28, 34*), particularly when acted upon by saliva or diastase.

A number of authors since the time of Năgeli have shown that the lamellae of starch grains differ in constitution and structure, and that there are at least two distinct kinds of lamellae. This view is confirmed not only by a microphysical examination of the grain, and by treatment with weak solutions of iodine and aniline stains, but also by treatment with water and various reagents as just pointed out. Both Salter and Meyer appear to hold to the theory that there is a distribution of crystalloidal substance in particular lamellae. Salter quotes Meyer as saying: "die schattierten Schichten bedeuten die schwach lichtbrechenden, relativ lockeren, an fester Substanz relativ armen, an Interstitien reichen Schichten, die hellen sind als die stark lichtbrechenden Schichten aufzufassen, welche die meiste feste Substanz enthalten." Here again it is unfortunate that the descriptions do not enable us to determine which layers are meant. It is likely, however, that the layers described as "schattirten Schichten" are the colloidal layers, and those designated as "hellen Schichten" are the crystalloidal layers.

In summing up the observations herewith presented, we find that the starch grain consists of colloidal and crystalloidal substances, these being arranged for the most part in distinct and separate lamellae, that is, at the point of origin of growth, and in the alternate lamellae the colloidal substance preponderates, associated with the crystalloid cellulose; whereas in the other layers the crystalloidal substance, consisting for the most part of granulose, occurs in greater proportion.

As a further evidence of the presence of these crystalloidal and colloidal areas we may say that the peculiar behavior of the colloidal layers toward aniline stains is analogous to the behavior of a section containing mucilage cells towards these dyes, the latter being taken up by the mucilage cells alone. Furthermore, as the characteristics of mucilage cells are most pronounced in anhydrous media, as concentrated glycerin, so a similar effect is observed in the starch grain, but owing to the action of the glycerin in readily forming soluble starch, the preparations of the starch grain, like that of the cell wall, when thus stained are best preserved in Canada balsam.

The crystalloidal character of certain of the lamellae as observed in connection with the swelling of the grain might be considered to be in the nature of microscopic clefts, but it should be said that we know of no colloid that behaves in this manner, and such an assumption does not seem to be well founded. Furthermore, this appearance (crystalloidal) might be considered as due to an internal folding of the substance of the lamellae, but this would only arise in case of a contraction or reduction in the area of the lamellae; but as we have already seen, the grain is swollen from two to four times its original size, and even in the fragments of the disintegrating grains the crystalloidal character is pronounced. It seems more likely, as I have already pointed out, that the reason this structure is not apparent under natural conditions is because the refractive properties of the crystalloidal substance so nearly resemble those of the associated colloid. The use of certain reagents, however, which are more or less penetrating in their action, cause an imbibition of water by the colloidal portions with consequent swelling of the grain, and hence a contrast in refractive power with the more insoluble crystalloidal substances.

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RECOMMENDATIONS AS TO THE NOMENCLATURE OF THE PROTEINS.[1]

It is well known that much confusion arises at the present time from the lack of any understanding, either here or abroad, as to the exact sense in which the various names applied to proteins (Proteinstoffe, Eiweisskörper, albuminoids) and their derivatives shall be used. No little difficulty is created by the use of a term in different senses, as well as ambiguity of meaning in some cases. It appeared desirable, therefore, to lay down rules for the guidance of students and workers, at all events in this country, which would tend to promote some degree of uniformity of usage. It was obviously desirable to retain existing terms as far as possible, especially as it was clear that the time is not yet come to coin strictly systematic names and that only provisional recommendations are desirable in the existing state of knowledge.

The following report is the outcome of a prolonged consideration of the subject by a number of chemists and physiologists. The original committee was called into being by the Physiological Society; its members were nominated by the two societies. The report of the committee was subjected to criticism, both by the Physiological Society and by the Publication Committee of the Chemical Society. At the instance of the latter body a number of chemists specially interested in the subject then took the matter into consideration in conjunction with a few representatives of the Physiological Society; finally, a draft report embodying the conclusions arrived at was prepared by Drs. Halliburton and Hopkins, which was considered and amended at a meeting of the Publication Committee of the Chemical Society, at which the physiologists were present.

RECOMMENDATIONS.

I. The word proteid—which is used in different senses in this country and in Germany—should be abolished.

II. The word protein is recommended as the general name of the whole group of substances under consideration. It is at present so used both in America and Germany. It admits readily of the use of such derived words as protease and proteose. If used at all, the term albuminoid should be regarded as a synonym of protein.

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[1] Reprinted from the *Pharmaceutical Journal*, March 9, 1907.

III. The sub-classes should be as follows:—

1. Protamines. These are simple members of the group. They are exemplified by substances like salmine and sturine which have been separated from fish-sperm.

2. Histones. These are more complex substances: this and the previous class probably pass gradually into one another. The class is exemplified by the histones separated by Kossel from blood-corpuscles; precipitability by ammonia is one of their distinguishing features.

3. Albumins. These are proteins of which egg-albumin and serum-albumin may be taken as typical examples.

4. Globulins. These are proteins which differ from the albumins in solubility; they are more readily "salted out" of solution than the albumins. They are exemplified by serum-globulin and fibrinogen. The class should also include certain derivatives of globulins such as fibrin and myosin.

N. B.—The carbohydrate radical separable in small quantities from many members of Classes 3 and 4 is probably not to be considered as a prosthetic group, as it is in the gluco-proteins (see below).

N. B.—It appeared advisable, especially from the teachers' standpoint, to introduce a general term to include proteins coagulable by heat (Classes 3 and 4); but a term likely to meet with general acceptance has not yet been suggested.

5. Sclero-proteins. This new word takes the place of the word albuminoid in the limited sense in which the majority of physiologists have been accustomed to use it. It includes such substances as gelatin and keratin; the prefix indicates the skeletal origin and often insoluble nature of its members.

6. Phospho-proteins. This class includes such substances as vitellin and caseinogen with its derivative casein. The prefix nucleo, frequently used in relation to this class, is incorrect and misleading.

7. Conjugated proteins. These are substances in which the protein molecule is united to a "prosthetic group." The principal sub-divisions are:—

(*a*) Nucleo-proteins.

(*b*) Gluco-proteins (*e. g.*, mucin).

(*c*) Chromo-proteins (*e. g.*, hæmoglobin).

8. Derivatives of proteins. Of these the products of protein-hydrolysis (a term preferable to proteolysis[1]) are those which require special attention. These should be classified as follows:—

(*a*) Meta-proteins. This is suggested in place of albuminate (acid-albumin, alkali-albumin), which is objectionable because (1) these products are obtainable from both albumins and globulins, also (2) because the termination ate implies a salt.

(*b*) Proteoses. This term includes albumose, globulose, gelatose, etc. The sub-division of these into proto-, hetero-, deutero-proteoses, etc., and the various modifications of Kühne's original classification have been considered; the whole subject is, however, at present too unsettled for any final nomenclature of these sub-divisions to be proposed.

(*c*) Peptones. This term should be restricted to the further products of hydrolysis which differ from the proteoses inasmuch as they cannot be salted out from solution and usually resemble them in giving the biuret test.

N.B.—It has been pointed out that certain vegetable products hitherto regarded as peptones do not give the biuret test. It does not appear possible to bring such exceptional substances into any general classification at present. The same difficulty in classifying arises in connection with certain other vegetable proteins; for instance, those which like gliadin are soluble in alcohol.

(*d*) Polypeptides. The majority of the polypeptides are synthetical substances. Some, however, have been separated from the products of protein-hydrolysis, and it is, therefore, advisable to include them in the present classification. They are .products of cleavage beyond the peptone stage, and consist of two or more amino-acids in association; the majority of those hitherto prepared do not give the biuret test.

IV. The term caseinogen should be used for the principal protein in milk and casein for its derivative, which is the result of the action of rennet.

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[1] Although mindful of the unfortunate fact that terms such as proteolysis fail to convey a meaning in harmony with that which is conveyed by the term electrolysis and hydrolysis (on which they are moulded) of decomposition *by*, the Committee have not ventured to deal with the difficulty; they recognize, however, that the practice is one to be obviated, if possible (compare Armstrong, *Proc. Roy. Soc.*, 1904, 73, 500).

V. The two principal proteins of the muscle plasma should be termed paramyosinogen and myosinogen; the term soluble myosin should take the place of v. Fürth's soluble myogen-fibrin; the term myosin should be restricted to the final product formed during *rigor mortis.*

BOOK REVIEW.

THE PHARMACOPŒIA AND THE PHYSICIAN. By Robert A. Hatcher and M. I. Wilbert. Chicago: American Medical Association Press. 1907.

This volume of 410 pages was prepared with the view of acquainting physicians with the scope and contents of the U. S. Pharmacopœia. It consists of a series of articles which originally appeared in the *Journal of the American Medical Association*, discussing the chief substances in the U. S. Pharmacopœia, classifying them according to their uses and describing their method of combination and how they may take the place of many proprietary preparations for which extravagant claims have been made. The classes include: General disinfectants; local disinfectants and antiseptics; internal antiseptics; general tonics; astringents; irritants, emollients and demulcents; local anesthetics and anodynes; general anesthetics; expectorants; analgesics and soporifics; circulatory stimulants; circulatory depressants; diuretics and diaphoretics; cathartics; parasiticides and antigonorrhœics; substances used as vehicles; and the National Formulary and the use of extra-pharmacopœial substances.

Possibly an idea of the treatment of the different classes by the authors may be had by giving briefly a few of the salient features of one of the chapters, as that on general disinfectants. After a brief historical treatment of the subject, the substances are grouped under the following sub-heads: (*a*) sunlight and heat; (*b*) chemical disinfectants; and (*c*) clinical thermometers and hypodermic syringes. The general properties of pharmacopœial substances are given, particularly as regards solubility, manner of combination and other facts that will be helpful to the physician in prescribing.

One is surprised at the amount of general information relating to the uses of pharmacopœial substances, including a comparison of their value one with another, as well as other substances which are on the market, and other interesting data which have been collated. This book will go a great way towards interesting the physician in the substances in the Pharmacopœia and cause him to be more deeply concerned in subsequent revisions. Surely it is the physician's province to determine what therapeutic agents ought to go into the Pharmacopœia, and it is the province of the pharmacist to provide the tests and make the galenicals which are to be presented. With this co-operation on the part of the two professions the practice of medicine must become more accurate and at the same time more valuable to the people.

This work of Thatcher and Wilbert is not merely worthy the attention of physicians, but is also deserving of perusal by pharmacists, as there is much in it which shows the necessity of having the line separating the practices of the two professions strictly defined. It is not at all unlikely that people generally would be better off financially and otherwise if medicines were only taken under the advice of physicians, and it is not too utopian to believe that both pharmacists and the public will awaken to the danger of not only patent medicines but self-prescribing, and see that in the use of medicines we are dealing with poisons which require the expert direction of the physician.

THE PHILADELPHIA BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The regular stated meeting of the Philadelphia Branch of the American Pharmaceutical Association, for April, was held in the Hall of the College of Physicians on the evening of Tuesday, April 3, 1907.

The interest that is generally manifested in the propaganda for popularizing U.S.P. and N.F. preparations was well illustrated by the large number of members and visitors who were present to hear or to take part in the discussion of ways and means for bringing about this particular reform.

In a paper entitled "Simplicity in Medication and the Evident Duty of the Pharmacist," Dr. M. H. Fussell pointed out that it was the evident duty of the physician to study the condition of his patient and to treat him accordingly. The use of ready-made or proprietary remedies he believed to be an indication of either indolence, ignorance or cupidity, that, when recognized as such, would be discredited and discontinued.

From an analysis of the prescription files, in one section of Philadelphia, he believes that the use of proprietary remedies is gradually decreasing. He found that while in 1901 a total of 32 per cent. of the prescriptions written in this section included proprietary articles, the same number of prescriptions in 1906 averaged but 23¾ per cent. with proprietaries.

He expressed the belief that pharmacists could help or hinder progress in this direction, and that they should do all in their power to discourage the use of ready-made preparations of all kinds.

Prof. I. V. S. Stanislaus read a paper entitled: "The Need for Discouraging the Use of Patent as well as Proprietary Medicines."

He expressed the opinion that the use of proprietary medicines is daily becoming more perplexing, and that there is practically no difference between patent and proprietary medicines.

This he believed to be an opportune time for active work, as the popular sentiment is clearly in favor of discouraging the use of nostrums, thus giving the pharmacist an opportunity to eliminate secrecy and fraud from the practice of his profession and to free himself from the shackles of the manufacturer of secret remedies as well as popular nostrums.

In a paper on "The Value of U.S.P. and N.F. Preparations as Compared with Proprietaries," Dr. Thrush asserted that the U.S.P. and the N.F. are not widely known among physicians and are absolutely unknown to many. He made a number of suggestions as to how pharmacists might popularize these books with physicians and, in conclusion, read a list of well-known proprietaries with the corresponding U.S.P. or N.F. preparations that had been found to have the same physiologic action.

Prof. Joseph P. Remington read a paper descriptive of "The Exhibition of U.S.P. and N.F. Preparations at the Coming Meeting of the American Medical Association." He described the object of the proposed exhibition and the abuses that it was designed to correct, and referred, incidentally, to the lack of recognition that had been accorded the preparations of the National Formulary by physicians.

As chairman of the Committee of Revision of the United States

Pharmacopœia he was glad to say that upwards of 60,000 copies of the Pharmacopœia had been sold to date, and that it was confidently expected that more copies of the eighth decennial revision would be sold than of all the previous editions combined.

Mr. John K. Thum read a volunteer paper entitled: "Why the Retail Pharmacist should Aid in Popularizing U.S.P. and N.F. Preparations," in which he asserted that the dishonest methods employed in exploiting so-called proprietaries are a reproach to the profession of pharmacy. He also expressed it as his belief that the popularizing of official preparations will require individual work on the part of pharmacists, but would do much to make them independent of manufacturers and nostrum makers.

The question was further discussed by Drs. Wood, Hare, Fussell, Thrush, Stewart and Lowe, and by Messrs. Remington, King, Morgan, Wilbert, Burk, Apple, Riegel and Blair.

Professor Remington, in the course of his remarks, strongly deprecated the reported tendency of pharmacists to charge more for U.S.P. and N.F. preparations than for corresponding proprietary preparations, and expressed the belief that practices of this kind would surely do much to discredit the propaganda and do an infinite amount of harm.

Dr. H. C. Wood, Jr., expressed it as his belief that the success or failure of the attempt to popularize legitimate pharmaceuticals rested entirely with the pharmacist, who, if he was willing and able to supply official preparations, could do much to assure success.

Dr. Hobart A. Hare said it was difficult to discuss the proposition without transgressing the lines of true professionalism. He thought that the burden of the argument certainly rested on the pharmacist, who would be required to demonstrate his willingness and ability to assume professional duties and to divest himself of the practice of selling popular nostrums and resorting to counter prescribing.

Dr. Hare further stated that he had found it advisable to cultivate the acquaintance of capable pharmacists, and in turn advised pharmacists to cultivate the acquaintance of physicians and inform them of the usefulness of new preparations.

M. I. Wilbert, *Secretary.*

PHILADELPHIA COLLEGE OF PHARMACY.

ANNUAL MEETING.

The annual meeting of the members of the Philadelphia College of Pharmacy was held March 25, 1907, in the Library, at 4 P.M. The President, Howard B. French, presided. Twenty members were present. The minutes of the quarterly meeting, held December 31, 1906, were read and approved. The minutes of the Board of Trustees for December 4, 1906; January 2d, February 5th and 20th, 1907, were read by the Registrar, Jacob S. Beetem, and approved.

The President read his annual report, from which are abstracted the following items:

The buildings are in excellent condition. An additional fire escape has been erected. A portion of the southeast corner of the Library has been partitioned off as a cloak-room for the women students—this is an improvement that has been much needed for some years past—it interferes but little with the library and has proven quite an advantage.

The tenant in the Aimwell School Building has been notified to vacate, in anticipation of razing the building and the erection of additional laboratory facilities to provide for the special courses as recommended by the Committee on Instruction. These courses will qualify your students to act as chemists in examining drug and food products as provided for under the Pure Food and Drugs Law. Plans for the new building have not as yet been perfected, but it is expected they will be ready in the near future, and when the building is completed your college will have additions to the Chemical and Microscopical laboratories equipped with the most modern apparatus, enabling your institution to maintain its high educational standard and to continue as the leader in the pharmaceutical world. It is the hope of your president that from time to time additions can be made which will give further enlarged facilities to students to perfect themselves in chemistry as applied to the various arts and manufactures, and to qualify them to take positions as chemists or superintendents of manufacturing plants. For three years past a number of your students have taken advantage of the unusual facilities offered by the college to perfect themselves as cement chemists, and to avail themselves of practice in a physical cement laboratory, which has been of great benefit to them. Your president is pleased to note that in proportion to the number of students who matriculated last year there are more students in attendance at the present time than at the same time last year.

The qualifications required for admission of students to your college are fully equal to, or probably exceed, the most exacting of any pharmaceutical college in the United States, and the preliminary examinations are now made under State authority.

During the year, five first-year students, fifty second-year students, and twenty-two third-year students have taken special work in the chemical laboratory—an increase of twenty-two over last year. Eight students have taken the special Course in Bacteriology.

Three members have died during the year: William B. Thompson, J. W. P. Outerbridge, and Joseph D. Marshall. Mention should be made of Albert E. Ebert, a graduate of this college and well known for his labors in the American Pharmaceutical Association.

Four members have forfeited their membership for non-payment of the annual dues.

During the year the membership has been increased by five Active, two Honorary and two Corresponding Members, as follows:

Active Members—Alfred Heineberg, Manuel Fernandez, C. Robert Weiser, of Philadelphia; Edwin L. Newcomb, of Vineland, N. J.; Lucius L. Walton, Williamsport, Pa.

Honorary Members—Prof. Fernand Ranwez, D.Sc., Louvain, Belgium; Prof. John M. Coulter, University of Chicago.

Corresponding Members—P. E. F. Perrédès, B.Sc., F.L.S., Wellcome Research Laboratories, London, England; and F. A. Upsher Smith, P.C., Briarfield, Chesterfield, England.

The activity of your Alumni Association is strongly commended, and it is expected that its able management will continue. The kindly co operation of all officially connected with the college is greatly appreciated.

The Committee on Nominations reported nominees for officers, trustees and committees to be voted for at this meeting.

Professor Sadtler, chairman of the Publication Committee, reported in part as follows: "It has been customary to publish an index of the JOURNAL about every ten years. The last decennial index was published in 1891. None was published for the decennary ending 1900. The Committee now deems it advisable to publish a twenty-year index in 1910."

Prof. Henry Kraemer, Editor of the AMERICAN JOURNAL OF PHARMACY, gave a lengthy report concerning the work of the past year.

Mr. William McIntyre reported for the Committee on Pharmaceutical Meetings as follows:

The pharmaceutical meetings have been held regularly during the past year. Three of the meetings have been held in the evening. A number of the meetings have been of special interest to the retail druggist. The October meeting was devoted to the discussion on Sunday closing and shorter hours for pharmacists, and much good has resulted from it. The December meeting was devoted to a discussion on business methods, and Harry B. Mason, of Detroit, presented a remarkable paper which was widely circulated and much appreciated. The committee has co-operated with the Philadelphia Branch of the American Pharmaceutical Association in several meetings, and the January meeting, at which the subject of a Pure Food and Drug Law for Pennsylvania was discussed, shows how much may be accomplished by hearty co-operation of the allied societies of medicine and pharmacy in Philadelphia.

The minutes of the meetings have been published regularly in the JOURNAL, and reports have been sent to the leading drug journals.

Joseph W. England, Curator of the Museum, reported as follows:

The Museum is in good condition and has received a number of valuable accessions during the year. The Reference Collection of official drugs and preparations in the reading room continues to be of much service to the students for study, and its value suggests the desirability of making provision in the new food and drug laboratory for a similar collection, enlarging it so as to cover all the National Formulary preparations, the commercial spices, food products, and other material relating to food and drug analytical work. In view of the growing importance of the microscope in the analysis of food and drugs, it would be most desirable to have also a collection—in addition to the very large collection of microscopical slides in the microscopical laboratory—of slides of typical sections of plant-parts and plant-products, together with such chemicals as may be necessary. H. K. Mulford & Co. have offered to the college a collection of antiquated tablet machines for the Historical Section of the Museum, and also a new tablet machine on consignment for use in the Pharmaceutical Laboratory, replacing it from time to time as improvements are made.

Thomas S. Wiegand, Ph. M., Librarian, made the following report:

During the past year there have been added to the Library 175 volumes among them many very valuable works on Chemistry, Botany and Pharmacy; the three Universities of Sweden have sent their proceedings, and a number of theses presented to their faculties for graduation. Some changes were made in the distribution of books, and now are much more accessible for reference, The theses of last year's graduating class have been bound, and the entire number now amounts to 243 volumes, embracing nearly five thousand theses. The Library has been visited by many persons, not members of the college, but interested in subjects that our Library could give them information about, and expressed themselves highly pleased at the facilities offered.

The Committee on Necrology, Prof. S. P. Sadtler, chairman, reported verbally that during the past two months several of our honorary members had died, and that a full report would be made at the meeting in June.

The Secretary of the Committee on Membership reported as follows: At a meeting of the college, held June 26, 1906, a motion was made that a Standing Committee on By-Laws be appointed, afterwards amended that the subject be referred to the Committee on Membership for consideration, and as so amended, was adopted.

The committee has considered the matter, and at a meeting held February 20th, it was voted that "we recommend that a Standing Committee on By-Laws be appointed by the President, to consist of three members," and further recommend "that the duties of this Committee be framed by the incoming Committee."

The recommendation was adopted, and the president subsequently named as the Committee on By-Laws: George M. Beringer, chairman; Joseph W. England and C. A. Weidemann.

Professor Remington referred to the death of Albert E. Ebert, a distinguished graduate of the college, and moved that the following minute be adopted, which was prepared by him and Professor Sadtler:

WHEREAS, The Philadelphia College of Pharmacy having received information of the death of Albert E. Ebert, Ph.M., an honored graduate of this college, be it

Resolved, That by his death Pharmacy has suffered an irreparable loss, his professional attainments, his personal character, and his intense earnestness in furthering every movement for the elevation of Pharmacy endeared him to all.

Resolved, That this college (his Alma Mater) place upon record its appreciation of the labors of her devoted son, and its deep sense of loss through his death.

The minute was adopted by a rising vote.

Letters were read from Prof. John M. Coulter, of Chicago, and Dr. Fernand Ranwez, of Belgium, acknowledging receipt of certificates of honorary membership; also from F. A. Upsher Smith, and P. E. F. Perrédès, acknowledging receipt of certificates of corresponding membership.

Professor Remington, on behalf of Messrs. Samuel W. and B. T. Fairchild, of New York, presented to the college their check for five hundred dollars towards establishing the new Pure Food and Drug Laboratory. The contribution was unsolicited and was the first received for this purpose. On motion of Professor Sadtler it was voted that the thanks of the college be tendered the generous donors.

The annual election of officers, trustees and committees was then held, Messrs. Bonta and Stroup were appointed tellers. Before the ballot was taken the President called attention to the By-Law that permitted other nominations with the consent of a majority of those present. No one proposing other nominees a ballot was ordered—a recess being taken while the ballots were being counted. The tellers reported the election of the following persons: President: Howard B. French; first vice-president, Mahlon N. Kline; second vice-president, R. V. Mattison, M.D.; treasurer, James T. Shinn; corresponding secretary, A. W. Miller, M.D.; recording secretary,

C. A. Weidemann, M.D.; curator, Joseph W. England; librarian, Thomas S. Wiegand; editor, Henry Kraemer. Trustees: Samuel P. Sadtler, William L. Cliffe, Joseph L. Lemberger. Publication Committee: Samuel P. Sadtler, Wallace Procter, Henry Kraemer, Joseph W. England, Joseph P. Remington, Martin I. Wilbert and Miss Florence Yaple. Committee on Pharmaceutical Meetings: Joseph P. Remington, C. B. Lowe, M.D.; Henry Kraemer, William L. Cliffe and William McIntyre.

The president appointed Mahlon N. Kline, William McIntyre, C. B. Lowe, Charles H. LaWall and H. L. Stiles as delegates to the Pennsylvania Pharmaceutical Association Meeting to be held at Bedford Springs on June 18th, 19th and 20th.

ABSTRACTS FROM THE MINUTES OF THE BOARD OF TRUSTEES.

December 4, 1906.—Professor Sadtler, chairman of the Committee on Library, reported a number of accessions to the library for the past month.

Mr. Beringer, chairman of the Committee on Instruction, made a report covering details regarding examinations in Latin, Pharmaceutical Arithmetic and Algebra. He also recommended that a Supplementary Announcement be published giving full information concerning the course of lectures to be established at the college, made necessary by the Pure Food and Drug Law.

Mr. French, chairman of the Committee on Property, reported a considerable saving having been effected in premium on a five-year insurance contract. He also submitted information concerning the Edward T. Dobbins Scholarship, which is now available.

January 2, 1907.—Mr. French, chairman of the Committee on Property, reported that the cloak-room for the women students was about completed.

Professor Sadtler, chairman of Committee on Library, reported a number of accessions during the month.

February 5, 1907.—Mr. French, chairman of Committee on Property, reported that an additional fire escape had been erected, and the buildings in general in good condition.

Mr. Beringer, chairman of the Committee on Instruction, reported that "as the Board of Trustees had approved of the establishment of special courses of instruction in the college," the Committee recommended that immediate steps be taken to establish a special course to educate students, graduates in pharmacy, and others, in such studies as would qualify them for service and work as chemists under the Pure Food and Drugs Act. To carry out this work, increased facilities must be provided—additional chemical and microscopical laboratories thoroughly equipped will be necessary, and increased teaching force must be provided. Two special courses are recommended: one to equip students for positions as chemists in manufacturing establishments, the second to equip students for government positions as food and drug examiners.

The suggestions of the Committee were favorably received and generally discussed. Further action was postponed in order that a special meeting of the Board might be called to which the Faculty were to be invited to be present.

The Committee on Membership reported favorably on the application of Lucius L. Walton, of Williamsport, Pa., who was unanimously elected.

February 20, 1907, Special Meeting.—The meeting was called to receive and further consider the report of the Committee on Instruction. Mr. Beringer for the Committee read a lengthy report, giving full details of the proposed special courses to be established. The report was very fully discussed, many of the members participating, after which the following resolution was adopted: "That the Committee on Property be authorized to have plans prepared for the erection of a Laboratory upon the site of the Aimwell School property."

C. A. WEIDEMANN,
Recording Secretary.

PROGRAMME FOR COMMENCEMENT WEEK AND THE REMINGTON CELEBRATION.

SUNDAY, MAY 12TH.

Baccalaureate Services at 4 P.M. in the Church of St. Luke and the Epiphany. Sermon by the Rev. David M. Steele.

MONDAY, MAY 13TH.

Annual Meeting of the Alumni Association at 2.30 P.M. Reports and Election of Officers.

Evening at 7.30 P.M. Forty-third Annual Reception to the Gruduation Class at the College. Presentation of Medals and Prize Certificates. Dancing.

TUESDAY, MAY 14TH.

Pharmaceutical Meeting, College Auditorium, at 3 P.M.

Evening, 7.30 P.M. Alumni Reunion and Banquet, Hotel Walton. Presentation to the College of an Oil Portrait of Prof. Remington.

WEDNESDAY, MAY 15TH.

Morning at 10 A.M. Annual Field Day at the Athletic Grounds, Forty-fourth and Parkside Avenue; 40-yard Dash, High Jump, Egg Race, Hurdles, Sack Race and Broad Jump, etc.

Evening. Professors' Banquet to the Graduating Class, College Auditorium, 7 P.M.

THURSDAY, MAY 16TH.

Commencement Exercises, 8 P.M., at American Academy of Music. Conferring of Degrees. Awarding Diplomas and Prizes. Address by the Hon. J. Hampton Moore.

During Commencement Week exhibits will be made in the various departments of the College which will prove both interesting and instructive.

It is hoped that all members of the Alumni and friends of the College will take part in the various exercises during Commencement Week.

APRIL PHARMACEUTICAL MEETING.

The stated Pharmaceutical Meeting of the Philadelphia College of Pharmacy was held Tuesday afternoon, April 16th, with E. M. Boring in the chair.

The meeting was devoted principally to a discussion of the formulæ given in the National Formulary.

M. I. Wilbert opened the discussion by the presentation of a paper on "The Scope and Shortcomings of the National Formulary," and exhibited in connection therewith a number of samples of preparations. (See page 205.) The speaker stated that many of the preparations, formulæ for which are given in the National Formulary, are of little or no value therapeutically, some of them being intended to replace similar proprietary preparations, and that in exploiting them, pharmacists should not recommend them to physicians on the ground of their therapeutic value, but only on the condition that if they have been using similar preparations these have the merit of having open formulæ. Mr. Wilbert said that the late Charles Rice, who was chairman of the first committee on National Formulary, objected to the admission of formulæ equivalent to proprietary formulæ, and that on this question there was a decided difference of opinion.

Referring to that portion of Mr. Wilbert's paper in which he commented on the formulæ of the National Formulary, Henry C. Blair said that he did not agree entirely with the statement that the presence of 10 or 15 per cent. of alcohol will destroy the action of a digestive ferment, and stated that a rennet preparation containing 16 per cent. of alcohol coagulated the casein of milk. Mr. Blair also spoke of another ferment preparation which contained 18 per cent. of alcohol, and yet was active.

Warren H. Poley said that clinical results seemed to show that alcoholic preparations of the digestive ferments have a certain value. In calling attention to some of the special preparations Mr. Poley said that those with some mystery about them, or those made at a distance, appeal to the physician as well as to the patient.

Mr. Wilbert maintained that the digestive ferments have a value, but not when administered internally, and in illustration pointed out that rennet, while useful, should be applied to milk in the sauce pan rather than after the ingestion of the milk. Continuing, Mr. Wilbert said that perhaps clinical and physiological results could not be discussed by pharmacists with physicians, but suggested that pharmacists keep closely in touch with the progress in therapeutics.

W. L. Cliffe called attention to the formula of the elixir of glycerophosphates and said that it does not give as satisfactory a preparation as that marketed by the manufacturers. He found that by replacing the aromatic elixir with white wine the tendency to become terebinthinate was overcome. He also advised increasing the amount of phosphoric acid by the addition of 15 c.c. of the dilute acid, and the addition of a small amount of alcohol to make up the deficiency caused by the use of white wine. With reference to the glycerinated elixir of gentian, Mr. Cliffe said that it was intended as a substitute for Gray's Glycerin Tonic originated by Dr. John B. Gray, but that the formula directed less gentian than the original one, which was furnished him a few years ago by Messrs. Kelley and Durkee, of Boston (AM. JOUR. PHARM., Vol. 70, p. 201).

Mr. Wilbert said that he knew the late Dr. Gray and that the formula used in Utica, N. Y., where he lived, differed from that used in Boston, and was a decidedly bitter tonic.

Continuing his remarks, Mr. Cliffe said that in order to prepare the antiseptic solutions of the National Formulary so that they will be acceptable, it is necessary to use essential oils of a high grade. It was also suggested that the oils be dissolved in the alcohol and the solution allowed to stand for some time, the final preparations being made up extemporaneously. Mr. Cliffe also pointed out that the solution of peptonate of iron with manganese on the market is not made by the use of peptonate of iron, but by the use of solutions of the essential constituents.

Prof. Chas. H. LaWall alluded to the presence of saccharin in glycerinated elixir of gentian and asked whether its use is advisable in view of the claims made by Dr. Vaughan that it is a protoplasmic poison.

Mr. Wilbert then called attention to the formula for compound cathartic elixir which directs 4·5 grammes of saccharin to 1000 c.c., but stated that the intention was to use one-tenth of this amount. He said that saccharin had been introduced into the National Formulary with the idea of imitating proprietary preparations, but considered its introduction a mistake and at variance with the original intention.

Commenting on this feature of the National Formulary Professor LaWall said that persons who evade the law are always seeking justification for their actions. He said that the use of saccharin in foods is prohibited by law, but that those persons who use it would seek to justify their course by referring to some such authority as that under discussion.

Mr. Blair said that the use of aromatic elixir in so many of the elixirs of the National Formulary gave them an undesirable sameness. He criticized the formula for elixir of Curaçao by stating that of the three oils of orange on the market none is that of Curaçao. Referring to the elixir of terpin hydrate, Mr. Blair stated that some time ago he carefully made up the quantity of elixir directed by the formula, and that about 15 fluid ounces had been placed in a bottle and kept in the cellar duly protected from light, but that it formed a deposit about ¼ inch in depth which consisted of sugar that had crystallized out. He said that the elixir is more palatable without the syrup and therefore saw no need for its use.

Prof. C. B. Lowe commented favorably on a number of the formulæ, but objected to the title "Mistura contra Diarrhœam" on the ground that it is not advisable to give opium at first in diarrhœal complaints, these formulæ all directing opium. The speaker also regretted that the formula for Liquor morphiae sulphatis was not included, as a good many clerks are not familiar with it.

Prof. Henry Kraemer said that the passage of the Pure Food and Drugs Act must be credited with being the cause of a more critical examination of the National Formulary and the Pharmacopœia than would otherwise have been the case, and with opening the mouths of pharmacists to talk as they had never done before, and suggested that the discussion be continued.

Prof. E. Fullerton Cook said that heretofore only a very few took an interest in these subjects, but that now manufacturers who formerly could not be begged to do so, were offering suggestions.

At the close of the discussion Professor LaWall presented a paper on "The Gambir of Commerce" (see page 203).

Professor Kraemer followed with a sketch of Linnaeus, in commemoration of the two hundredth anniversary of the birth of the famous naturalist and teacher, and in introducing his subject made the following preliminary remarks:

> The two hundredth anniversary of the birth of Linnaeus, the great Swedish naturalist, falls upon May 23, 1907. When we consider the work which Linnaeus did in the field of natural history, including botany, mineralogy and zoology, and the profound influence which his work has had upon the subsequent development of these sciences, it is eminently fitting that this anniversary of his birth should be celebrated and reference made to his life and work. I have always been very much impressed by the life and teachings of Linnaeus, and at the close of the Columbian Exposition, in a paper which I read here at the college and also in New York before the Torrey Botanical Club, I expressed the hope that the two hundredth anniversary of Linnaeus's birth would furnish the occasion for an international botanical exposition to be known as the "World's Linnaean Exposition." (AM. JOUR. PHARM., Vol. 66, p. 92.)
>
> Such an exposition has not been planned, but the time is none the less significant. A year ago we celebrated the two hundredth anniversary of Franklin, and while the memory of Linnaeus is not revered by the people at large like that of Franklin, his work as a scientist will probably be as enduring as that of "the self-taught sage of Philadelphia."

Mr. Wilbert approved of the effort to honor the memory of Linnaeus here in Philadelphia, partly on account of the fact that several of his correspondents resided in this vicinity. He said that Dr.

Adam Kuhn, the first professor of botany in America, was a pupil and very close friend of Linnaeus. Dr. Kuhn was born in Germantown in 1741, and it was probably through the influence of one of Linnaeus's correspondents in this country that he went to the University of Upsala for his medical education. Linnaeus had many correspondents in America, probably through one of his pupils, Peter Kalin, who came thither on a visit in 1748.

FLORENCE YAPLE, *Secretary pro tem.*

DRUG AND FOOD INSPECTION DECISIONS.—PHYSICIANS' PRESCRIPTIONS.

THE STATUS OF PACKAGES COMPOUNDED ACCORDING TO PHYSICIANS' PRESCRIPTIONS AND ENTERING INTO INTERSTATE COMMERCE.

Packages resulting from the compounding of physicians' prescriptions under the Food and Drugs Act are the subject of many queries, of which the following are representative:

If a druggist compounds a physician's prescription and sends it into an adjoining State, will it be necessary to state upon the label the amount of alcohol, morphine, etc., that may be present?

Supposing a regularly licensed practising physician has patients located in various States of the Union and supplies medicines to them through the mails, by express, and otherwise, do such packages come under the provisions of the law, and, if so, can the required information be given in pen and ink on the label?

We treat drug addictions on a very gradual tonic treatment reduction plan. For instance, if John Doe writes for information as to the home treatment for his addiction, I send him a symptom blank which contains, among other questions, an inquiry as to the kind of drug he uses, how he uses it, the length of time he has used it, etc. In addition to giving me a complete history of his case, he states he is using 10 grains of sulph. of morphine (each twenty-four hours), hypodermically or internally, as the case may be. In prescribing in his case I immediately put him on just one-half of the amount he reports as his daily allowance, combining same with a bitter tonic.

It is necessary for the reduction in drug cases to be made without the patient's knowledge. It is, of course, understood by all physicians that you can not trust a drug habitué to properly make his own reductions, for, as a matter of fact, if he knew to what extent I was reducing his daily allowance of opiates, he would imagine the reduction too rapid, he would get frightened, and would take to his former drug for relief. Treatment prepared in this way I do not think would come under the head of a proprietary preparation or a patent medicine, as I prescribe the contents of each bottle to meet the requirements of each individual patient. All instructions as to the conduct of treatment and the use of auxiliary remedies are given by letter; consequently there are no printed labels or cartons containing any claims concerning the efficacy of this treatment.

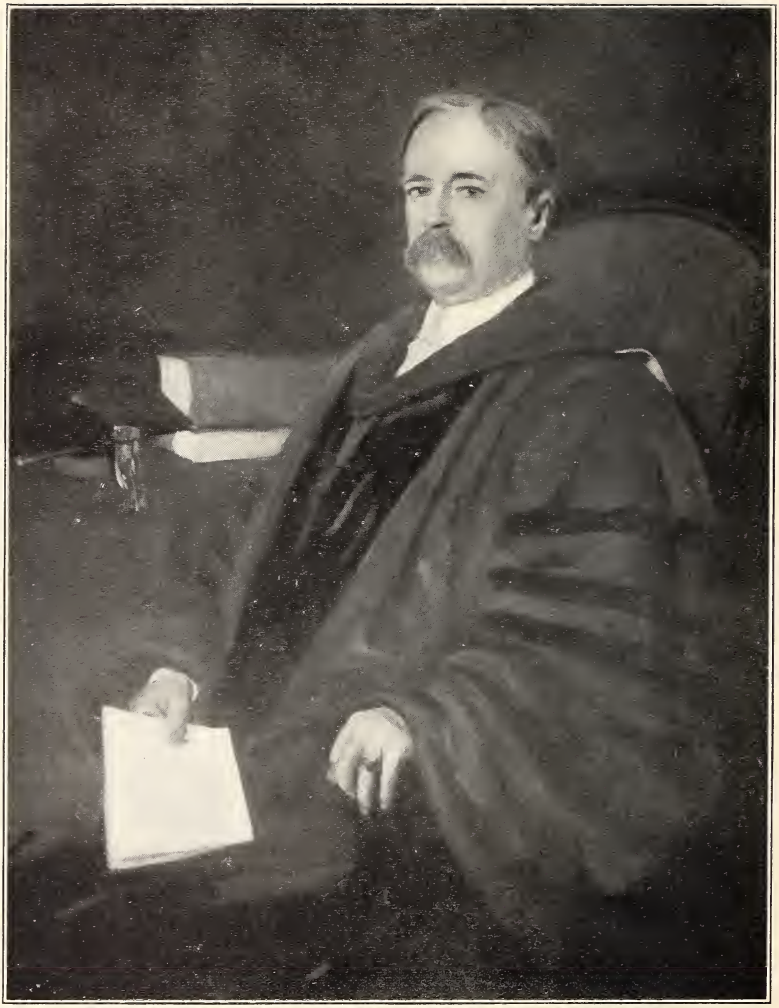
I would be pleased to have you inform me whether in your opinion I would be violating the pure-food law in any manner, shape, or form should I continue to label my preparations as I am now doing, and in having them prepared in ——— and forwarded direct to my patients in this and other States.

If a package compounded according to a physician's prescription be shipped, sent, or transported to any State or Territory or the District of Columbia to another State or Territory or the District of Columbia by a compounder, druggist, physician, or their agents, by mail, express, freight, or otherwise, the label upon such package is required to bear the information called for by Congress. If, however, the patient himself, or a member of his household, or the physician himself carries such package across a State line, and such package is not subject to sale, it is held that such package need not be marked so as to conform with the law, because such a transaction is not considered one of interstate commerce.

The package may be marked so as to comply with the act by either stamp, pen and ink, or typewriter, provided all such written matter is distinctly legible and on the principal label, as prescribed in Regulation 17.

JAMES WILSON,
Secretary of Agriculture.

WASHINGTON, D. C., March 13, 1907.



PROFESSOR JOSEPH PRICE REMINGTON

(From portrait painted by Henry R. Rittenberg, and presented to the Philadelphia College of Pharmacy by the Class of 1906, May 14, 1907.)

See page 291.

THE AMERICAN
JOURNAL OF PHARMACY

JUNE, 1907.

PATENT
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THE LOCAL SOCIETY AS THE UNIT OF THE AMERICAN MEDICAL ASSOCIATION.[1]

BY ALBERT M. EATON, M.D.

That we may better comprehend this subject of medical organization, I shall devote a few minutes in describing the source of the movement by briefly relating its history.

In Colonial days, when the population was scattered, transportation difficult and medical education limited, the necessity for medical organization was not very pressing.

The facts known concerning the formation of the earliest of these Colonial medical societies are few. We know that from 1735 until at least 1741 there existed a medical society in Boston.

In 1765 a number of medical men in Philadelphia formed themselves into a society under the name of the Philadelphia Medical Society. It existed about three years, when it merged itself into a society which subsequently changed its name, becoming the American Philosophical Society, known to-day throughout the whole civilized world.

The Medical Society of the State of New Jersey was organized in 1776 and has maintained a continuous existence ever since.

On May 14, 1780, a meeting of physicians was held in Boston, which organized the Boston Medical Society, and this society was a powerful factor in organizing the present Medical Society of the State of Massachusetts.

After having petitioned the Legislature in 1766 and 1774, both times being refused, the medical men of New Haven, Conn., succeeded in organizing a medical society, January 6, 1784, and it is yet in existence.

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[1] Read at the May meeting of the Philadelphia Branch of the American Pharmaceutical Association.

In 1787 our own College of Physicians of Philadelphia was founded, the history of which is known to most of us. This closes the Colonial period, and I would say of those medical men of this period, who worked shoulder to shoulder to uplift and improve the educational standards of their profession, that they were men of learning and high character, and built better than they knew when they initiated those movements for a better organization of their profession, as much of their work stands to-day a monument to their greatness.

SECOND PERIOD.

From 1800 to the foundation of the American Medical Association, 1847, I have named as the second period.

During the first half of this period the country was overrun with doctors of all kinds, some practicing without diplomas, some having taken but one short course of lectures of two to three months, some none at all. We had regulars, irregulars, mongrel and hybrid. The shoemaker or tailor, tired of work, laid down his tools and picked up the calomel bottle and the bleeding-lance, and with this kit of tools started on a career as a healer.

With such a motley crew do you wonder that seeds of discord were scattered, that the dignity of the profession was lowered and its usefulness was impaired? How could such a class of men see any necessity for the organization of a medical society?

During the later half of this period the profession suffered much from the advent of the Homeopathic and Eclectic schools of medicine. The contentions between members of these schools and the regular profession were so acrimonious that the public lost almost the semblance of respect for us collectively. We became the butt of the press, the comic almanac and illustrative journal.

With the advent of a better class of men into the professorial chairs of the medical schools of our large cities, came the desire for a better organization of our profession.

There came into existence year after year from this time a local, a county, a State or an interstate medical society until the number became sufficiently large to warrant the organization of a national medical society.

This brings us to the third period—the birth of the American Medical Association.

In 1847, in the city of Philadelphia, the American Medical Association was born. At its organization there were thirteen State societies in existence, and shortly after five more were born. At its start it was a representative body; its legislative and business affairs were controlled by delegates from affiliated societies, each society sending one delegate for every ten members. In the early history of the Association the more important colleges and hospitals were allowed to send delegates, but when the medical societies became more numerous and representative, the colleges and hospitals lost their representation. This brings us down to the close of our late civil war.

At this period there was no such thing as cohesive organization of our profession. A number of public-spirited members of our guild, and a few editors of some of the higher-class medical journals, attempted to arouse an apathetic profession to the necessity of closely binding together that they might improve their educational and legal standing, but their efforts were in vain.

In New England and a few other States there existed a form of organization, but none was so effective as that evolved by Jerome Cochran of Alabama. His plan of organization, with some alteration of details, is the one which has been adapted by nearly all the State societies in the scheme of general organization.

In the course of time the example of the State of Alabama had its effects on the general profession. Medical laws began to make their appearance on the statute books of the several States, medical examining boards came into operation and with them came a better class of physicians. Medical societies increased, and nearly all of them had representation in the American Medical Association, so that its legislative machinery became unwieldy and cumbersome. A local society would send more delegates than the State society.

This brings us to the year 1900, which is the *fourth period*, or the *period of reorganization of the American Medical Association.*

The whole profession of the United States is heavily indebted to Dr. J. N. McCormack, of Bowling Green, Ky., who introduced the resolution calling for the appointment of a committee to consider a plan to reorganize the American Association. This resolution was offered at the Atlantic City meeting, June, 1900. There was a gentleman from Nebraska, who came to this meeting for the same purpose. He had considerable experience in his own State with the same kind of work—reorganizing his State. He was determined that efforts should be made at this meeting to bring to an end this chaotic state of medicine as a profession. This man was Dr. George H. Simmons, now at Chicago, and secretary of the American Medical Association and editor of its *Journal.*

Dr. W. W. Keen presided at this meeting, and the resolution was adopted, and Drs. McCormack and Simmons were placed on the committee. Six months after Dr. Foshay, of Cleveland, was made a member. The labor of this trinity of good men was the means of leading the profession in its quest for a better mode of organization.

The committee made its report at the St. Paul meeting, June, 1901, it was accepted, and the committee continued, with instructions to prepare a uniform constitution and by-laws to be recommended for adoption by all State and county societies.

At the Saratoga meeting, June, 1902, the plan became operative, and the whole profession, practically, has been bound together into one compact, interrelated organism. That the importance of all this was realized, that the profession was at last ready and ripe for reform, was shown by the prompt and unanimous acceptance of the entire plan of reorganization, and except Maine and Virginia, by every State society of our Union.

With this brief, sketchy and incomplete history of the organization of the medical profession, I will now consider the second part of my essay.

THE LOCAL SOCIETY AS THE UNIT OF THE AMERICAN MEDICAL ASSOCIATION.

When speaking of medical societies the local society nearly always means the County Society, yet every local society is not always a County Society. In many of the large cities there are sometimes one or more local societies whose objects and aims are not always in harmony with the work of the County Society of that particular county, and the profession would be benefited by their extinction. This is one of the causes which has delayed the reorganization of our profession. Fortunately for us these conditions and societies are rapidly disappearing.

In the reorganization of the American Medical Association the county society was made the unit in the plan of organization. If we keep in mind the objects of organization we find the local society is most important of all the medical bodies.

While the State and national bodies meet but once a year, some of the local societies meet weekly, bi-weekly, monthly, bi-monthly and quarterly. This makes the local society the foundation on which the State and national societies must be built.

It will be perceived that nearly all of the scientific work is performed by the local societies.

To-day, and in years to come, the County Medical Society must necessarily be the chief centre of interest. It must be built up and made strong and representative; it must produce harmony, promote good fellowship, remove petty jealousies; it must teach its members that the keynote of organization is co-operation; and it must give to its members educational and scientific advancement.

A member will have his education continued; he will have his resources multiplied; he will achieve both self-confidence and respect for others, and increase public respect for the medical profession and for himself.

The local society is becoming more and more of a post-graduate course every year, and our members are being benefited by coming in contact with those medical activities which mentally brace them for their daily professional duties. In other words, the real teaching is being done not by the text-books but by our high-grade medical journals, and the teaching received at the meetings of the medical societies.

Our purpose of organizing the medical profession is to increase membership, to extend and develop personal intercourse in order that to each may be given the opportunity of bringing out what is best in him, to aid him in cultivating and strengthening the scientific spirit, thus aiding, individually, in advancing the common good of the whole profession.

No profession can attain and maintain a high position among people unless it is founded upon great principles of service to the great mass of humanity, and this differentiates our profession from a trade organization, labor union and a political machine.

The *local society* has its power and influence increased in a two-old manner, viz: First, from circumference to centre; second, from centre to circumference. By the increase of membership of the local society, the national society increases its wealth, power and influence by an increase in its membership. In return, the local society is benefited by the national society establishing committees on Medical Education, Legislation and Council on Pharmacy and Chemistry, and its *Journal*, whose editor is ever ready to denounce fakes and fakirs, whether it be the mis-called Christian Science or Osteopathy—whatever that may be—has proven an invaluable agent in promoting organization.

The *local society* has increased its membership largely by protecting its membership from suits for alleged malpractice; 97 per cent. of these suits are instituted as blackmail, and, if stoutly defended, they are abandoned when the case is called. That has been the experience of our Philadelphia County Society. Mr. Hampton L. Carson, of the Philadelphia bar, is our attorney, and when he takes charge of one of our cases we never hear of either the plaintiff or his lawyer.

The *local society* has been helped by the Council of Pharmacy and Chemistry of the American Medical Association. It has made, and is continually making, medical men believe that the time has now come for them to prescribe preparations of the United States Pharmacopœia and the National Formulary. Every body of medical men I have had the honor of addressing the past year, I have appealed to them to do two things—first, join the American Medical Association, so as to get the journal—one of the best medical journals of the world—and become familiar with the work of the noble, disinterested men who are doing this chemical and pharmaceutical work for our guidance; second, I have appealed to them to make it a point to prescribe, whenever they can, the preparations of the United States Pharmacopœia and National Formulary.

In my association with medical men from all parts of Pennsylvania, I find the disposition for prescribing these remedies is growing.

The *local society* of our own city will be called upon in the near future to take measures to help abate an evil which concerns you pharmacists as well as the physicians of our city. I refer to the *club practice evil.* This buying the services of the physician and druggist at wholesale, and then selling them at retail, not to the poor and needy, but too often to those well able to pay, should cease.

A joint meeting of both professions should be held to condemn the evil, and wipe out a practice which degrades both professions.

Pharmacists should join with the medical profession and take an active part in those affairs of civic life which relate to the welfare of the city and State, as giving the people pure air, pure water, pure food, pure drugs, and to aid the medical profession to legislate out of existence the quacks, abortionists and others who prey on the poor, unfortunate sick. If we could have had the united support of your profession throughout Pennsylvania, our One Board Medical Examiners Bill would have been on the statute book to-day instead of resting in the graveyard of a legislative committee.

Cordial relations between the two professions should be fostered; one must have the cordial support of the other if favorable legislation for both of our professions shall reach a successful issue.

I thank you, gentlemen, for your courtesy and your attention.

THE AMERICAN CHEMICAL SOCIETY AND THE WORK OF ITS LOCAL SECTIONS.[1]

By Charles E. Vanderkleed.

In discussing the organization and work of the American Chemical Society, and especially that of its local sections, this evening, with special reference to their applicability to the needs of the American Pharmaceutical Association, it is especially appropriate to note that the growth and development of the Society dates back to the time when it, too, passed through a kind of reorganization, a little account of which may not only prove of interest to our organization, but may teach some points of value. However, in my opinion, more is to be gained by showing the essential differences in the objects of the two associations than by attempting to help the Pharmaceutical Association by showing how it may emulate the Chemical Society.

The American Chemical Society is thirty-one years old, having been organized in New York City in 1876. It is therefore the junior by two dozen years of the American Pharmaceutical Association, which this year celebrates its fifty-fifth anniversary. The history of the development of the American Pharmaceutical Association from the time of its organization is familiar to this audience and need not be repeated here. Neither is a detailed account of the growth of the American Chemical Society necessary or appropriate at this time.

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[1] Read at the May meeting of the Philadelphia Branch of the American Pharmaceutical Association.

I shall only attempt, therefore, to state a few facts with regard to the American Chemical Society, and to point out a lesson or two to be gained from a study of present-day conditions.

During the first fourteen years of its life, the American Chemical Society enjoyed but a precarious existence. Although its membership was spread out pretty well all over the country, the members were few in number, and only a comparatively few of them were able to derive any immediate and practical benefit from it, as its meetings were held monthly in New York City. During this time, its officers were by no means confined to New York and the adjacent territory, however, for among the earlier presidents of the society may be noted the names of F. A. Genth, J. C. Booth, and G. F. Barker, from Philadelphia. Throughout this time, the Society, when considered from anything but a purely local New York point of view, was little more than an honorary roll of the more prominent names connected with chemistry in this country.

After fourteen years, its members numbered only about 250, when in 1890, there came a notable change, a change which should be significant to us who are gathered here this evening to discuss the reorganization of the American Pharmaceutical Association, because this change marked the inauguration, in the American Chemical Society, of the local section plan. From the time of the first general session in Newport in 1890, followed quickly by the organization of local sections, dates the real growth and development of the Society. The Rhode Island, Cincinnati, and New York sections were the first to organize in the order named, and these were quickly followed by others well distributed over the country, until to-day the Society boasts of twenty-two local sections, five of which were chartered during the past year.

The general officers of the American Chemical Society consist of a president, secretary, treasurer and librarian. The presidents or presiding officers of the local sections are the vice-presidents of the general society. The order of precedence of the vice-presidents is that of the dates of their respective admissions to membership in the society. The general governing body of the society is the Council, which consists, ex-officio, of the president, all past-presidents, secretary, and treasurer; twelve elected councillors-at-large, four of whom are elected each year, and one councillor elected by each duly chartered local section for each hundred members, or fraction thereof, it may have.

The president and councillors-at-large are nominated and elected by ballot, the nominations and elections both occurring entirely by mail before the annual meeting of the society.

As the society is an incorporated one, a board of directors, consisting, ex-officio, of the president, secretary and treasurer—and four directors elected by the Council, look after the legal matters of the society and hold and administer all the property in trust for its uses.

The standing committees of the society, appointed by the Council, are three in number, viz., the committees on membership, finance, and papers and publications. The last named committee is an exceedingly important one in the work of the American Chemical Society, since to it is entrusted the monthly publication of the *Journal of the American Chemical Society*, and, since January 1, 1907, the bi-monthly publication of the *Abstract Journal*. The chairman of this committee is also editor of the *Journal*, and happens to be also the General Secretary of the society, a very convenient arrangement, though not specifically required by the constitution.

The annual dues for members until this year were $5, but with the inauguration of the *Abstract Journal* the dues were raised to $8 per annum. The publication of the *Abstract Journal* is by far the most important advance made by the society since its reorganization in 1890. This step was not taken without some trepidation, as it was feared that the increasing of the dues might cause some loss of membership. These fears proved to be without foundation, however, for our membership has materially increased instead of decreased since the advent of the new *Journal*, and the expense of this vast undertaking is being readily met.

According to the last official roster, the membership amounted to 3,035, and is now probably considerably in excess of that number, as very many new members are being received, and very few are dropping out. That so few members, once gained, are lost, is a source of gratification to our society. Thus, of a membership of about 170 in the Philadelphia Section, but two, to the knowledge of our local secretary, dropped out during the last year.

The Chemical Society differs from the Pharmaceutical Association in having two general sessions yearly instead of but one—one in mid-summer and one in mid-winter, usually during the Christmas holidays. The mid-winter meeting is always held simultaneously with the anual meeting of the American Association for the Advancement of Science, thus giving its members who attend an opportunity to listen to and participate in the deliberations of many other scientific organizations in which they may be interested.

As it would be tiresome to listen to further details as to the organization of the society, I will pass on, with the remark that I have here a copy of the constitution and by-laws if anyone is further interested along this line.

We are more interested to-night with the local section work, and without any doubt the life of the American Chemical Society's organization lies with its local sections. Comparatively few members can afford to take the time to attend the semi-annual meetings. Hence the inducements to a chemist to join the American Chemical Society are two-fold,—first, the receipt of the *Journal of the American Chemical Society*, which, since its origin in 1879, has grown into a publication of great merit, and of the bi-monthly *Abstract Journal*, which, by the way, devotes a chapter in each number to Pharmaceutical Chemistry, under the editorship of Prof. A. B. Stevens, of Michigan; and secondly, the pleasure and profit arising from the intercourse with his fellow-chemists at the monthly local section meetings. To illustrate how greatly these local meetings are appreciated,—in some of the Western States where chemists are fewer and farther between, alternate meetings are held in different places. Thus, in the Indiana section, while sessions are generally held in Indianapolis, they are occasionally held at Purdue University in Lafayette, sixty-four miles away, and are well attended. I refer to this, not because I advocate a skipping about. As a general rule, meeting in one spot, and that a well-known and centrally-located one, at a regularly set time each month, is better, but that members should go sixty or seventy miles to its meetings is significant of the fact that the local section is the life of the organization.

An account of our Philadelphia section meetings, with which, as a member of the executive committee, I am more familiar, may be of interest. This section was organized in 1899, the eleventh in the country, and we now have about one hundred and seventy members, which includes all members within a radius of sixty miles from the Philadelphia City Hall.

Our meetings are held from September to June, inclusive, on the third Thursday evening of each month,—generally at the Engineers' Club on Girard Street,—but occasionally at the Harrison Laboratory of the University of Pennsylvania. While it is only occasionally that we can say the attendance is large, our meetings generally make up in enthusiasm what they lack in numbers. The suburban membership, if we may so call it, is quite loyal to our meetings, as towns as far as from Reading on the north to Millville, N. J., on the south are generally represented. Our present chairman is from Bryn Mawr College, while our chairman-elect is from Swarthmore. The programmes consist almost exclusively of the reading of scientific papers, which are generally thoroughly and ably discussed. Very little time is lost in the transaction of business, and practically none is spent on the political questions of the business enterprises represented. As a matter of fact, the latter would be almost an impossibility, as the number of distinct lines of work represented is almost as great as the membership. A natural conclusion would therefore be that, with a membership with such diverse employments, a lack of unity of interest would prevail. But we have happily learned by experience that the most helpful ideas are often derived from the papers of those whose work is apparently the farthest removed from our own.

The officers of the local section consist of a chairman, vice-chairman, secretary-treasurer, and an executive committee of three. The busy man among these is the secretary-treasurer. He has no dues to collect, as there are no membership fees in the local organization, the rebate from the general society, amounting to twenty per cent. of the dues collected from the members residing within the precincts of the local section territory being amply sufficient to pay all local expenses. As is the case in our A. Ph. A. local section here, however, the executive committee has largely imposed upon the good nature and well-known working capacity of the secretary to arrange the programmes, entailing not a little work,—for which we do not always remember to appreciate him as much as we should.

Among our plans for programmes for next year's meetings is the proposition to have a number of symposiums on subjects of general interest to chemists. During the last winter, the New York Section of the Society of Chemical Industry, which, by the way, operates under an organization quite similar to ours, held a number of such symposiums, among them being those on Camphor and on Soap Making. The idea is a good one, and might well be emulated by our local A. Ph. A. branch.

One little feature of our local section meetings that has proved to be a good thing during the past year has been our informal dinner at 6.30 P.M. on the evening of our monthly meeting. The idea originated from the fact that many of the members whose work is in the city could not conveniently get home to dinner and back again in time for the 8 o'clock meeting. These men thought of the desirability of meeting at some pre-arranged hotel or café and dining together, as they had to remain "down town" for their dinners anyway. From this start, it was only a step to have the secretary send out reply-postal card notices to the membership generally, and now not only do most of the men located in the central part of the city come to the dinners, but many whose work is near their residences forego the pleasure of dinner at home to meet with us.

Of course, all difficulties and differences have not been eliminated in the American Chemical Society. The principal bone of contention has been the preponderance in management, and in the authorship and nature of the contributed papers, of the ultra-scientific research and college men over those of the technical or works chemists—a partial counterpart of which is not entirely absent in our own Pharmaceutical Association. Indeed, this feeling in the society a year or so ago was so pronounced that the retiring president, W. F. Hillebrand, in his presidential address, saw fit to devote considerable attention to the subject.

I have every reason to believe, however, that this feeling has largely abated since the advent of the new *Abstract Journal*.

After all is said and done, it makes little difference how the machinery of the two organizations is constructed. The mechanisms may be nearly enough perfect—both will run smoothly if given the proper kind of force back of them. A locomotive of perfect design and construction will not run well on inferior fuel, nor will it work with coal if designed to burn oil. So in our associations we may have perfect organizations, constitutions, by-laws, and rules, but unless the spirit back of them is in force and in harmony, the machinery of our organizations will not run. It is therefore to the objects sought by these respective societies that we must turn for our real comparison, and for the lessons which each may draw from the other.

We have in the American Chemical Society an organization in the interest of pure science only. In our meetings and publications we have been criticized by our technical members for devoting too much time to researches in theoretical chemistry and not enough time to practical problems. I wish to call attention to the fact to-night that in the American Pharmaceutical Association we are drifting to the other extreme, and devoting too much time to the economic, the political and the purely business side of our profession, and not enough to the truly professional. That there are good and sufficient reasons, or rather causes, for this state of affairs, I do not deny. In the American Chemical Society there is no common business ground upon which we can get, in order to further business propositions. Our several lines of work are entirely too diversified to permit of this. However, we technical men perhaps misjudge our collegiate and research co-workers when we ascribe to them only qualities of abstruse reasoning. Questions touching upon the practical side of the businesses represented in our local section of the American Chemical Society could with propriety be more often dwelt upon with profit to all concerned; and I am pretty sure that our college-professor membership would be most highly interested in any discussion as to ways and means to raise their salaries and increase their incomes.

On the other hand, the rank and file of the members of the American Pharmaceutical Association have so little time left for truly scientific pharmacy, after devoting the time necessary for looking after the commercial side of their business, that it is not to be wondered at that during the first year of the life of our local section of the American Pharmaceutical Association practically no papers or discussions on the professional side of our business have been either called for or offered.

True, the peculiar conditions which have obtained, during the first year of our existence as a local section, have had much to do with this state of affairs. The year has been one of great legislative activity; has seen the birth of the Food and Drugs Act; has experienced the attempt to bring into closer harmony and relationship the medical and pharmaceutical professions; has witnessed the climax of the popular demonstration against the patent-medicine evil; and so, I say, it is no wonder that the first year's meetings of our local section have been devoted, if I may offer the criticism, almost too closely to the consideration of these legislative, economic, and political matters, to the exclusion of purely scientific pharmacy. The error in the American Chemical Society has been on one side, that of the American Pharmaceutical Association on the other; here we have the two extremes.

In the year to come let us not make the serious mistake of crowding out all scientific papers and discussions. That this has been done has been felt by several pharmacists and pharmaceutical chemists engaged in the advance of pharmaceutical science. This feature of our work has been to a limited extent covered by the pharmaceutical meetings of the Philadelphia College of Pharmacy, but even here, economic subjects have taken up much time, and the holding of afternoon meetings, as a rule, has not enabled the attendance to be all that could be desired. Several men have spoken to me about it, and this idea has even gone so far as to crystallize into the proposition to form a local society or club of pharmaceutical chemists for the purpose of discussing scientific matters appertaining to their profession. I trust that it meets with the entire approval of those who have spoken to me about it to suggest that the local section of the American Pharmaceutical Association should make the organization of such a club entirely unnecessary. This local section should be the breeding place, so to speak, of many of the scientific papers and discussions to be brought before the annual meeting.

We hear much these days about the need for advancing the status of professional pharmacy. We cannot accomplish this by devoting all our time to the legislative and political aspects of our business affairs; we must discuss scientific papers, and we must encourage our members who have the time and facilities for pharmaceutical research to contribute such articles, regardless of whether they are in the retail drug business, or members of the scientific staffs of manufacturing houses, or engaged in teaching in our colleges of pharmacy.

To sum up, therefore,—the American Chemical Society owes its success and loyal support, *first*, to the interest taken in its local section work, thereby enabling its members, except those inaccessibly located, to enjoy a share in its work; *second*, to the excellence of its monthly *Journal* and bi-monthly *Abstract Journal*, which are furnished for the yearly membership dues of $8.00.

The American Chemical Society local meetings could be improved by studying the American Pharmaceutical Association meetings' habit of discussing economic problems.

The American Pharmaceutical Association can be built up in like manner if its local sections arise to the occasion and do their duty as connecting links between the individual member and the general association,—devoting more time than they have in the past to questions of a scientific nature.

Whether or not the American Pharmaceutical Association members are as well repaid for their $5.00 dues, or $6.00 as it really is, by the copy of the annual proceedings and the monthly American Pharmaceutical *Bulletin*, which is, as its name implies, merely a bulletin of announcements and minutes of various meetings, as are the members of the American Chemical Society for their $8.00 fee for which they receive the twelve numbers of the *Journal*, and the twenty-four numbers of the *Abstract Journal*, is problematical,—but I do not feel it incumbent to discuss that feature here. I doubt very much whether the American Pharmaceutical Association is yet ready to undertake the publication of a pharmaceutical journal, including abstracts of the world's pharmaceutical work, true as it is that such a journal is needed.

But the advantages to be gained by the well-balancing of local section work is, I trust, apparent to all.

PHILADELPHIA, May 7, 1907.

FOR A READJUSTMENT BUT NOT THE REORGANIZATION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.[1]

By Henry P. Hynson, Baltimore.

"Prove all things; hold fast to that which is good," is an admonition we may well keep in mind while undertaking to alter the form of organization of our beloved Association.

It can not be believed that any one favoring a change is led by aught but the best and sincerest desire to strengthen and help on this great organization; boundless charity, therefore, should be held for all those whose views may differ from our own.

While we may not be able to "prove all things," we may easily "hold fast to that which is good." And we must do this with respect to the real foundation of the Association not only because the original preamble is still good and sound and appropriate, not only because the original "aims" and "objects," as set forth in Article I of the Constitution of 1852, are still good and sound and appropriate, but because, also, these are a priceless and inspiring heritage from the great fathers which we must, indeed, and by all means, restore in original, unchanged form, "hold fast" and keep ever before us in testimony of the great worth and far-reaching goodness of the founders and as a stimulus to us and to those who will follow.

The American Pharmaceutical Association was conceived in a convention of delegates and was born of a convention of delegates; delegates from "incorporated and unincorporated pharmaceutical societies." It grew into a body of delegates and units, as it has continued to be and is to-day. It will not, therefore, be anything at all new to suggest that the delegate body be enlarged and that the delegate himself, be given better recognition and the real power of a representative. This will be carrying out the evident intentions of the founders and will make the Association the representative pharmaceutical body they designed it to be. We can afford to be liberal in this regard and make it not only representative of its members but of all pharmacists worthily wearing the title.

The Association has always delegated to special bodies, to committees, to the Council, work that it has seemed that these could better execute, consequently the formation or enlargement of executive bodies within the Association and as a part of it can not be considered innovations.

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[1] Read at the May meeting of the Philadelphia Branch of the American Pharmaceutical Association.

Many alterations, patches and additions have, from time to time, been made to and upon the organic law and the by-laws of the Association, necessarily, to meet changed conditions, and to make room for progress and for the growth of the Association; this has been done until it can be done no longer. In place of this odd, many-sided form, an entirely new superstructure must be built, affording all the facilities and conveniences for better living and for a greater growth. This must be built, however, upon the original foundation, which is still firm enough and broad enough to support our greatest needs.

It is because of considerable study given the form of organization for local branches, when chairman of the committee on their organization, that I now venture to suggest the forms I have attached hereto, hoping they will, at least, serve as a basis for discussion.

The explanatory preamble and Article I of the Constitution, which gives the name to the Association and sets forth its aims and objects, will be found to be, and should be, an actual restoration which will answer every requirement of to-day while pleasantly and profitably linking us to the golden past.

Article II seeks to define the character of an effective association and to describe its component parts, while Article III is intended to fully describe the various kinds of members of both General Body and Council and places restrictions upon the delegates, that they may be familiar with the work of the Association. The officers are named and their elections are set forth in Article IV. The other articles of the Constitution are intended to protect the funds and endowments from undue attack and to preserve the power of the General Body by giving it the ability to make and alter the by-laws governing the Council and Board of Trustees and to amend the Constitution, which seems to cover all essential points.

Naturally, those by-laws intended to regulate the conduct of the Council, the Board of Trustees and the Sections are of most importance, and while these should be ample and safe, they should be *extremely simple* and *very elastic*. There should be opportunity for the display of originality in the management of the meetings and arrangement of programmes, as the proposed Committee on Programmes and Committee on Time and Place of Meeting will permit.

The sections, especially, should be given much latitude, their wishes respected, and they should be vouchsafed the greatest possible amount of encouragement.

There seems little need for exacting detail, it may be wondered indeed if it were ever necessary to expressly say "the President shall take the chair at the proper time." It is certainly not so in this day and generation. Undoubtedly there is need for more detail than has been offered in the draft attached, but there is certainly no need for all that now appears in the by-laws.

Regarding the qualifications for membership, I have, purposely, made no suggestions, fearing my ideas are too radical for the state of pharmacy as we see it, yet, if we do not make the requirements for membership high enough to make it honorable, few will *strive* to attain it.

Finally, it appears to me to be very desirable and of great importance to have the State associations attached to the A.Ph.A., and we must, by all means, try to keep in close and cordial touch with the American Conference of Pharmaceutical Faculties and with the National Association of Boards of Pharmacy. All of these must become veritable parts of the Association with active representatives in its Council, and to this end must we labor and to this end must we make ample sacrifice.

It is with sincere humility and earnest apologies that I submit the following suggestions:—

AMERICAN PHARMACEUTICAL ASSOCIATION.

PREAMBLE.

WHEREAS, The advancement of pharmaceutical knowledge and the elevation of the professional character of Apothecaries and Druggists throughout the United States are dear to us in common with all well-disposed pharmaceutists; and, whereas, a large portion of those in whose hands the practice of pharmacy now exists, are not properly qualified for the responsible offices it involves, chiefly by reason of the many difficulties that impede the acquirement of a correct knowledge of their business:—

Therefore, We, the members of a Convention now met at Philadelphia (September, 1852), composed of Apothecaries and Druggists from different sections of the Union, and from all the Colleges and Societies therein existing, with the object of deliberating on the condition of our profession, do hereby resolve and constitute ourselves into a permanent Association, to meet annually, at such times and places as may hereafter be determined, for more effectually accomplishing the objects for which we are now assembled, and do now adopt the following

CONSTITUTION.

Article I. Name, Aims, and Objects.

This Association shall be called the American Pharmaceutical Association. Its aim shall be to unite the educated and reputable Pharmaceutists and Druggists of the United States in the following objects :—

(1) To improve and regulate the drug market, by preventing the importation of inferior, adulterated or deteriorated drugs, and by detecting and exposing home adulteration.

(2) To establish the relations between druggists, pharmaceutists, physicians and the people at large, upon just principles, which shall promote the public welfare and tend to mutual strength and advantage.

(3) To improve the science and the art of pharmacy by diffusing scientific knowledge among apothecaries and druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

(4) To regulate the system of apprenticeship and employment so as to prevent as far as practicable the evils flowing from deficient training in the responsible duties of preparing, dispensing and selling medicines.

(5) To suppress empiricism, and as much as possible restrict the dispensing and sale of medicines to regularly educated druggists and apothecaries.

Article II. Composition.

The "Association," as provided for in the Preamble and as named in Article I, shall be composed of two principal parts, namely, "The General Body," and "The Council." The General Body shall be divided into Sections, and from the membership of the Council shall be formed a Board of Trustees.

Article III. Membership.

The General Body may include regular, life, and honorary members. The Council may include ex-officio, elected, and delegate members, all of whom must have been members of the General Body, in good standing, for three years and shall be known as Councilors.

Article IV. Officers.

The officers of the Association shall be a President, First Vice-President and Second Vice-President, who shall be elected annually by the General Body ; a Chief Councilor, General Secretary, Treasurer, Reporter on Progress of Pharmacy, Journal Editor and Local Secretary, all of whom shall be elected annually by the Council.

Article V. Funds.

All permanent and special funds, including those derived from life membership and such as may be bequeathed to the Association or otherwise donated to it, shall be invested by the Treasurer in such securities as may be approved by the Board of Trustees. The interest only of the current year from such funds may be used for defraying the expenses of the Association for that year.

Article VI. By-Laws.

By-Laws for the regulation of the General Body as well as for the government of the Council and the Board of Trustees, shall be enacted by the General Body, in regular session, and no change in such By-Laws may be made unless notice of the proposed change has been given at the session immediately preceding the one at which the motion to amend is made. No such motion shall be considered carried unless two-thirds of all the votes cast shall have been favorable to it.

Article VII. Amendments.

Amendments and alterations to the Preamble or Constitution may be made at any annual meeting, provided notice of the proposed change has been given at the annual meeting immediately preceding the one at which the motion to amend is made. Such motion must receive three-fourths of all the votes cast before it may be considered as having carried.

BY-LAWS.

Chapter I. General Body.

SECTION 1. Composition :—This body shall be composed of such regular and life members as shall attend the annual meetings.

SEC. 2. Officers :—These shall be a President, First Vice-President and Second Vice-President, who shall be elected annually by this body, and the General Secretary, who shall be elected by the Council.

SEC. 3. Duties of Officers :—The President shall preside at all sessions, shall deliver an address at the first session of the annual meeting following his election, shall appoint all the committees of this body, not otherwise provided for, and perform such other offices as may be assigned him. In the absence of the president, his duties shall be performed by one of the vice-presidents. The General Secretary shall perform the usual offices of a secretary ; shall make a record of the proceedings and report same, or as much thereof as may be required, to the Council.

SEC. 4. Councilors :—At each annual meeting three members shall be elected to serve three years as Councilors and to take the places of the members of the Council who have served three years. Members of the Council from this body shall not be eligible to re-election until one year has elapsed following a full service of three years.

SEC. 5. Election :—The officers and councilors shall be elected by secret ballot and installed during the last session of this body, at each annual meeting, after having been nominated at the first session in the following manner : Near the close of the first session a secret ballot, a blank for which the secretary shall furnish, may be cast by each member present for such nominees as the member may select. The two members receiving the highest and next to highest number of votes for the several offices and the six members who shall receive, in order, the greatest number of votes for councilors shall be declared the nominees and shall be posted as such. For the election, a ticket, upon which all the names of the nominees shall be printed, shall be furnished each competent elector, by the Secretary, at the time the ballots are to be cast.

SEC. 5. Scope:—Beside the offices already assigned it, this body shall hold and conduct the opening and closing of the annual meetings; shall receive delegates from foreign and national bodies; shall hear the reports of its own committees and delegates, which reports shall be referred to the Council, and hear such reports and transact such business as may be referred to it by the Council.

SEC. 6. Sections:—This body, for the purposes of facilitating the reading and discussion of papers and essays, shall be divided into five parts under the following heads:—

Section on Education and Legislation,
Section on Research and Investigation,
Section on Manufacture and Practice,
Section on Commerce and Management,
Section on History and Museum.

These sections shall hold session during the annual meeting between the opening and closing sessions of this body. Each section shall elect, annually, a Chairman, Vice-Chairman and Secretary who shall constitute a committee which shall manage the affairs of the section during its incumbency, under such rules and regulations as the section shall, from time to time, establish and shall be approved by the Council.

SEC. 7. Sessions:—This body shall hold, at least, two sessions at each annual meeting, the first on the opening day and the last shall close the regular meeting of the Association. The order of business and program for all sessions shall be arranged for and be published by the Committee on Programme, provided for in Chapter IV.

Chapter II. Council.

SEC. 1. Composition:—The officers of the General Body, the chairmen of the several sections and the officers of this body, who are not otherwise members of it, shall be ex-officio members; the President of the American Conference of Pharmaceutical Faculties and the President of the National Association of Boards of Pharmacy shall be invited to become and may become ex-officio members. The other members shall be the nine Councilors elected by the General Body; delegates from local branches of this Association and delegates from the state, territorial and provincial pharmaceutical associations.

SEC. 2. Delegates:—Each regularly established local branch of this Association with more than twenty-four and less than seventy five active members shall be entitled to send one member to the Council meetings; all such branches with seventy-five or more members shall be entitled to send two members to the Council meetings. Each state, territorial or provincial pharmaceutical association which shall have in its membership more than twenty-four and less than seventy-five members of this Association, in good standing, who are not counted as active members of a local branch of this Association, shall be entitled to send one delegate to the Council meetings and any such association having seventy-five or more such members shall be entitled to send two members to the Council meetings. All delegates to the Council must have been members of this Association in good standing for three years.

SEC. 3 Officers:—This body shall annually elect from its members, a Chief Councilor, who shall preside at all meetings and perform such other duties as may be assigned him. In case of his disability or absence, the President of the General Body shall act in his place. There shall also be elected by this body, annually, from the members of the Association, a Treasurer, a General Secretary, a Reporter on the Progress of Pharmacy, an Editor for "The Bulletin," and a Local Secretary.

SEC. 4. Business:—This body shall transact all the business of the Association at its annual meetings, excepting that which has been assigned to the General Body, the Sections, Board of Trustees, Standing or Special Committees.

SEC. 5. Trustees:—The Chief Councilor, the Treasurer and the General Secretary, ex-officio, and four other members of the Council elected by it, shall be constituted a Board of Trustees. This Board shall have charge of all permanent, special and current funds and shall dispose of and expend the same according to the Constitution and Rules of Finance. It shall have charge of all the business of the Association during the interim of meetings and shall transact any other business that may be committed to it by the Council. The Board of Trustees shall make a full report at the first session of the Council, at each annual meeting.

Chapter III. Board of Sections.

The Chairmen of the several sections shall be formed into a board which shall elect a Chairman and Secretary. It shall see that all papers and essays are properly distributed; arrange for joint sessions, if desirable, instruct the Chairman regarding programme and perform such other offices as will conduce to the effectiveness of the sections.

Chapter IV. Committee on Programmes.

The President, Chairman of Board of Sections, Local Secretary, a representative from the American Conference of Pharmaceutical Faculties and a representation from the National Association of Boards of Pharmacy shall be constituted a Committee on Programme which shall have plenary power to arrange and publish the general programme for the annual meeting and the programme in detail for the sessions of the General Body.

Chapter V. Committee on Time and Place of Meeting.

The Chief Councilor, General Secretary, Chairman of Board of Sections, President of the American Conference of Pharmaceutical Faculties and President of the National Association of Boards of Pharmacy, shall be constituted a committee which shall have plenary power to select and appoint the place and time of annual meeting. The decision must be made and announced on or before January 1st of each year.

PROGRESS IN PHARMACY.

A QUARTERLY REVIEW OF SOME OF THE MORE INTERESTING AND IMPORTANT ADVANCES IN PHARMACY AND MATERIA MEDICA.

By M. I. Wilbert,
Apothecary at the German Hospital, Philadelphia, Pa.

The interest and attention of pharmacists is still largely centered on Food and Drug Legislation. No less than seventeen States have enacted laws that are more or less closely patterned after the Pure Food and Drugs Act, June 30, 1906, and this, with the generally evidenced desire to have these laws actually enforced, should go far to bring about more satisfactory conditions in the drug and apothecary business. In addition to Georgia and Vermont the following States have adopted pure food and drug legislation: West Virginia, Kansas, North Carolina, South Carolina, Wyoming, Oregon, California, Washington, Missouri, Colorado, New Hampshire, South Dakota, North Dakota, Texas, Indiana, and Tennessee.

While pharmacists were active in many States in favor of the enactment of laws of this kind, it appears that at least in some sections they opposed not alone legislation but also worked in opposition to the medical societies of their respective States. This is evidenced by the report of the proceedings of the Tennessee State Medical Society (*Journal American Medical Association*, April 20, 1907, page 1372), where Dr. A. B. Cooke, of Nashville, is reported as saying: "Notwithstanding the bitter opposition encountered from the drug trade we were successful in getting a pure food and drug law passed."

A decree of far-reaching importance and one that should go far to redeem the retail drug trade from the pernicious effects of the agreements and contracts that it has formed and fostered during the past decade, was handed down recently in the United States Circuit Court in Indianapolis. This decree enjoins the National Association of Retail Druggists, the National Wholesale Druggists' Association, the Proprietors' Association of America, and upwards of twenty firms and individuals from combining, or by threats or other means compelling manufacturers or dealers to enter into combination or conspiracy in restraint of trade. While to persons familiar with present-day conditions in the drug trade this seriously worded decree is suggestive at least of "Much ado about nothing," there is underlying it all the promise of something better, and a more hopeful outlook for the future.

The written or understood agreements that have been entered into between retail pharmacists and manufacturers of some of the more objectionable nostrums made for popular consumption have not been generally considered to be a credit to American Pharmacy and the tacit understanding known as the Tri-partite plan has certainly been in restriction of trade, so far as the retail druggist was concerned.

It is to be hoped that being, by a decree of the court, divorced from his obligations to manufacturers the retail pharmacist will more fully live up to the dictates of his own conscience and will endeavor to educate, shield and protect his customers in matters of health and hygiene.

Sunday Closing is receiving considerable attention both in this country and abroad. In Germany, despite the opposition of the police authorities, the apothecaries are gradually enlarging on their Sunday rest privileges, and in quite a number of cities and towns they have received permission from the police authorities to close their shops alternately, providing they display a sign indicating the pharmacies that are open. In France the pharmacists are making even more rapid progress in this direction. The pharmacists of one section of Versailles have arranged to alternate: seven out of the eight pharmacists closing each Sunday and feast day, for the entire day. Daily closing at 9 P.M. has also been arranged for. (*Chem. and Drug.*, March 16, 1907, page 405.)

A rather novel arrangement has been entered into by the pharmacists of Auxerre, the chief town of the department of Yonne. The ten pharmacists of this town have agreed to close every Sunday and have established a central dispensary where medicaments can be secured for cases of emergency. Each pharmacist, in turn, takes charge every tenth Sunday.

Opsonins.—In medical journals much space is being devoted to the publication of reports on the development and the use of opsonic therapy. "The Review of the Opsonins and Bacterial Vaccines," published in this JOURNAL for March, 1907 (page 141) should be carefully read and re-read by every pharmacist. This article constitutes an excellent and really interesting presentation of the theory of the opsonins, the further study of which is destined to play a very important part in the treatment and prevention of disease.

Literature on Opsonic Therapy.—An exhaustive list of the recent literature on this interesting subject has but recently been published in the *Journal of the American Medical Association* (May 4, 1907, page 1539).

International Pharmacopœia Commission.—The Belgian Royal Academy of Medicine has made a proposal to form an International Pharmacopœia Commission, with its seat in Brussels, with the object of furthering uniformity among the existing pharmacopœias, as a result of the Brussels Conference for the unification of formulæ of potent medicaments.

The Dutch Pharmacopœia Commission has already promised its adhesion, and the Belgian Government is to approach the other governments which participated in the Conference. (*Chem. and Drug.*, April 20, 1907, page 578.)

Studies in Experimental Alcoholism is the title of Hygienic Laboratory Bulletin No. 23, that contains a detailed account of a series of experiments, conducted by Dr. Reid Hunt, on the effect of varying amounts of alcohol on oxidation processes in the animal body. The results obtained are destined to lead to additional observations and will undoubtedly shed much light on the direct effects of the use and abuse of alcohol in health as well as disease. So far as published, these experiments appear to confirm the frequently expressed opinion that alcohol, in all forms, is a potent factor and that its continued use, or abuse, may and does lead to certain changes in metabolism that are deleterious in character and tend to reduce the resistance of animal organisms to the poisonous effects of certain ingested, and probably also to self-produced poisons.

Transactions of the Section on Pharmacology and Therapeutics of the American Medical Association, at the fifty-seventh annual session, held at Boston, Mass., June 5 to 8, 1906, have just been reprinted in one handsome octavo volume of 328 pages.

The book contains much that is of direct interest to pharmacists, and the material is presented in a form that is readily available for reference.

The American Medical Association.—The fifty-eighth annual session of the American Medical Association is to be held at Atlantic City, June 4 to 7, 1907, and promises to be one of the most interesting and most important meetings that this Association has ever held. The attendance is expected to equal if not exceed that of Boston last year, and extensive preparations are being made to entertain the visiting physicians and their friends. This will be the third meeting in Atlantic City within a decade, evidencing the popularity of this known resort with physicians.

The World's Production and Consumption of Rubber, for the year July 1, 1905, to June 30, 1906, amounted to 68,000 tons and 62,574 tons respectively. Of the 68,000 tons produced in this period over one-half came from America, about 23,400 tons from Africa including the East African Islands, while the remaining (1,800 tons) came from Asia and Polynesia. Of the 23,400 tons of African rubber 4,500 tons were produced by the Congo State, 1,500 tons by French Guinea, 1,250 tons by Angola and 1,000 tons by the Gold Coast. In America Brazil heads the list with a production of 41,000 tons. The Central American States furnished 400 tons, Mexico from 150 to 200 tons and Bolivia about 1,100 tons. (*B. and Col. Drug.*, 1907, page 313.)

Hydrogen Dioxide as an Aid in the Examination of Sputum.—Peters (*Muench. Med. Woch. Schr.*, 1907, page 9) recommends the addition of hydrogen dioxide to sputum as a simple and most effectual means of breaking up tenacious masses and distributing the tubercle bacilli evenly through the specimen. (*Journal American Medical Association*, 1907, page 1556.)

Use of Picrolonic Acid for the Alkaloidal Valuation of Drugs has been reported on by Matthes and Rammstedt, who have conducted a series of experiments with dinitro phenyl methyl pyrazolone, known as picrolonic acid, for the quantitative precipitation of certain alkaloids. The authors have demonstrated the working accuracy of this method with mixtures of known quantities of alkaloids and have devised comparatively simple methods for determining the alkaloidal content of several preparations of nux vomica, hydrastis and jaborandi. (*Pharmaceutical Journal*, April 27, 1907, page 527.)

Glucosides of Frangula Bark.—Tunman (*Phar. Cent'h*, 1907, page 99) reports a number of microchemical and gravimetric analyses that appear to indicate that the amount of anthra glucosides contained in Frangula bark varies at different times of the year and reaches a maximum in the month of April.

Campho-Phenique, Composition of: A report of the Council on

Pharmacy and Chemistry (*Journal American Medical Association*, April 20, 1907, page 1365) states that this substance, said to contain 49 per cent. of phenol and 51 per cent. of camphor, really consists of a mixture of approximately 20 per cent. of phenol and 38 per cent. of camphor with an inert substance that proved to be liquid petrolatum.

Campho-penique powder was found to consist chiefly of an inorganic talcum-like substance with approximately 8 per cent. of a mixture of camphor and phenol, chiefly the former.

Medicinal Foods.—The Council on Pharmacy and Chemistry of the American Medical Association has recently published an exhaustive study on the comparative value of so-called medicinal foods and milk. (*Journal American Medical Association*, May 11, 1907, page 1612.)

This report is too exhaustive and in many respects too technical to abstract. It should be carefully studied by every pharmacist who is at all interested in the professional side of his calling, so that he may be in a position to further explain the various points in connection with it, to the physicians in his neighborhood.

Glyco-Thymoline.—Dr. J. Kochs (*Apotheker Zeitung*, 1907, page 167) reports an examination of this preparation made in the Pharmaceutical Institute of the University of Berlin. One rather interesting point is the statement that the mixture is now colored with tincture of cochineal. In other respects this analysis conforms rather closely to others that have been made in this country. Dr. Kochs concludes that the preparation consists of potassium carbonate, sodium benzoate, sodium borate, smaller portions of sodium salicylate, thymol and menthol with glycerin and alcohol, and colored with tincture of cochineal.

Aniso-theobromin.—Theobromine sodium anisate is a double salt that is only slightly soluble in water. It is claimed to have the action of diuretin, but to be devoid of all deleterious action on the heart. (*Phar. Zeit'g*, 1907, page 280.)

Atoxyl.—E. Forneau (*Journal de Phar. et Chem.*, 1907, page 332) asserts that the statement made by the manufacturers of atoxyl that it is the anilid of metarsenous acid is not correct and that it in reality is the mono sodium salt of ortho arsenic acid. Atoxyl does not contain 37·69 of arsenic, as claimed, but only 29 per cent. It is further stated to be identical with a preparation made by Béchamp, in 1863, by heating anilin arseniate.

Bromurol is the mono brom isovalerianylurea obtained by the condensation of urea with bromisovalerianylbromid. It occurs as white, nearly tasteless needles soluble in hot water, alcohol and ether, but only slightly soluble in cold water.

Bromurol melts at about 145° C. and is readily sublimed. It has been recommended as a hypnotic in doses of from 0.3 to 0.6. (*Phar. Cent'h*, 1907, page 143.)

Mensulin is said to be di methyl pyrazolon hexahydro cynol valerianate. It occurs as a white, somewhat hygroscopic powder, but is now marketed in tablet form as a sedative in nervous and menstrual disorders. (*Phar. Cent'h*, 1907, page 172.)

Metramin is said to be but another addition to the already numerous names for hexamethylentetramin. (*Phar. Cent'h*, 1907, page 340.)

Monotol is an ethyl glycol acid ester of guaiacol, and at about 31° or below occurs as a white crystalline mass that melts readily at the normal temperature of the body to a colorless somewhat aromatic oily liquid. It is said to possess the analgesic properties of guaiacol and is preferably used by inunction.

Monotol is but slightly soluble in water, but is readily soluble in fats and the fatty oils. (*Phar. Cent'h*, 1907, page 172.)

Mutton Tallow as an Excipient for Pills.—Keratin-coated pills not infrequently pass through the intestinal tract without being dissolved. Zaworski recommends that in place of any coating mutton tallow be used as an excipient. Pills made with this excipient are not affected in the stomach but are readily disintegrated in the small intestine. Preparations of arsenic and of mercury, iodine, benzoic, carbolic, salicylic and tannic acids, creosote, guaiacol and copaiba are all used in this way. The melting point of the mutton tallow should be about 45° C., and each pill should not contain more than 0.10 of tallow and an equal amount of medicament or other diluent. (*Phar. Cent'h.*, 1907, page 292, from *Therap. Monatsh.*)

Pittylen is a dry amorphous powder having a yellowish brown color and a slight tar-suggesting odor. It is soluble in alcohol, ether, acetone, chloroform, turpentine and dilute solutions of the alkalies. It is said to be a condensation product of wood tar with formaldehyde and is therefore a variable mixture of the normal constituents of tar. (*Apothek. Zeit'g*, 1907, page 249.)

Quinine Tannate.—The Academy of Medicine of Rome, Italy, recently passed a resolution asking the government to have quinine tannate in the form of chocolate drops distributed for the use of children in malarial regions. Zeri, Concetti and others related very favorable experiences with it. (*Journal American Medical Association*, April 20, 1907, page 1362.)

This action, combined with the marked popularity of quinine tannate on the continent of Europe, is singularly interesting in view of the fact that this substance has met with little or no use in this country.

Tiodin is said to be a combination of thiosinamine with an organic iodine compound, and is claimed to have the specific action of both of its components. (*Apothek. Zeit'g*, 1907, page 103.)

Vinopyrin, a white crystalline powder, is being introduced in Germany under this name as a remedy for neuralgia, migraine and rheumatism. It is said to be a combination of tartaric acid and phenetidin and is probably identical with tartrophen introduced some years ago. (*Phar. Cent'h.*, 1907, page 291.)

BOOK REVIEWS.

A TEXT-BOOK OF BOTANY AND PHARMACOGNOSY. Intended for the use of students of pharmacy, as a reference work for pharmacists and as a handbook for food and drug analysts. Second revised and enlarged edition. By Henry Kraemer, Ph.B., Ph.D. Illustrated with 321 plates embracing upward of 1500 figures. Octavo; 840 pages; cloth, $5, net. Philadelphia: J. B. Lippincott Company. 1907.

As would be expected by those who know the author, Prof. Henry Kraemer's "Text-Book of Botany and Pharmacognosy" is original in conception and in the text. Of course other authors have been consulted, and proper acknowledgment is made therefore. A perusal of the work, however, impresses one with the fact that it is not a compilation gathered by reading, but rather the result of careful observation and work.

A feature that will be noted at once, is the large number, and excellence of the illustrations. These are nearly all from original photographs, or drawings by the author, and by themselves represent a great amount of labor.

Part I treats of botany. The first chapter deals with the great groups of plants, from the lowest to the highest, in proper sequence.

The structural relations, the points of similarity, and the succeeding points of difference are discussed in a thorough and interesting manner. The second chapter treats of the "Outer Morphology," or gross structure, of Angiosperms. Commencing with the root, the plant organs are studied in detail. While structural botany is the main subject, so much of plant physiology as is necessary to show the development of organs, is introduced.

Much is said and written at present by agriculturalists relative to nitrogen-fixing bacteria. An interesting paragraph, with illustrations, on this subject is found in the section on roots.

Chapter III is devoted to plant histology. The cell, its various forms, cell contents and cell development, are all exhaustively treated. That the work is designed specially for pharmacy and medical students, is evidenced in Chapter IV. This takes up the classification of the Angiosperms, that yield vegetable drugs only; stating briefly the characteristics of each order, family and species.

Part I ends with a short chapter on the cultivation and propagation of medicinal plants, with a list of those growing wild, of those cultivated in this country, and of foreign plants that might be cultivated here. The summary of these lists will surprise many, in showing that about three-fourths of all medicinal plants grow wild, or by cultivation in this country. Attention is called to the necessity for the cultivation of our wild medicinal plants. Most pharmacists are aware of the constant advance in price of such drugs as hydrastis, for instance, due wholly to the fact that the natural supply is fast becoming exhausted. This appeal for cultivation is most timely.

Part II is pharmacognosy, pure and simple. In the first chapter, seeds, roots, leaves, etc., are studied in groups. The descriptive matter is very complete, but concise as well. Lists are given of all constituents, so far as known. Methods of collection and preparation are given, as are the common adulterants and sophistications. Profuse illustrations are found here, consisting of photographs of whole drugs and drug plants, and of microscopic sections. These are unexcelled.

The second chapter, on powdered drugs and foods, is very interesting and instructive. Few, if any, in this country have given more time to this subject than has Professor Kraemer. An elaborate and carefully prepared classification of powdered drugs and foods is here presented, and a systematic study of these is made possible for the student. The knowledge to be gained from this chapter enables one to recognize all of the important drugs, spices, etc.; their common adulterants and the quality as well. While each chapter is fully illustrated, in no part of the work will the illustrations be of more service than those found in this chapter. It is difficult to teach or to study microscopic material from descriptive matter only. Perfect reproductions are here given of all characteristic elements found in the powders studied.

In these days of drug and food inspection, this chapter will be of great service. I know of no American work in which is to be found so much carefully prepared matter on this subject.

In Part III is given a list of reagents, and directions for preparing, staining and mounting of powders and microscopic sections.

This work of Professor Kraemer's is a valuable addition to the scientific knowledge of the subjects treated, and the author has reason to feel great satisfaction with the result of his labor.

C. F. NIXON.

THE DISPENSATORY OF THE UNITED STATES OF AMERICA. Nineteenth edition, thoroughly revised, largely rewritten, and based upon the Eighth Decennial Revision of the United States Pharmacopœia. By H. C. Wood, M.D., LL.D.; Joseph P. Remington, Ph.M., F.C.S., and Samuel P. Saddler, Ph.D., LL.D., assisted by Albert B. Lyons, M.D., and Horatio C. Wood, Jr., M.D. Sheep; octavo; 2008 pages; $8. Philadelphia: J. B. Lippincott Company. 1907.

This new edition of the United States Dispensatory is the product of three men who have had an unusually long experience in editing encyclopedic works of this character, and who, in procuring the assistance of two well-known investigators and authors, have shown that they recognize the present-day difficulties in writing such a stupendous and authoritative work without competent assistance.

The present edition is practically a new book. It has been entirely rewritten, and the reading matter is arranged in double columns. Probably the desirability of separating official from unofficial substances, as has been the custom of the authors of this work, was never more appreciated than at the present time, when the standards for the official substances are recognized by the national Food and Drugs Act. Another desirable feature of the book is the increase in the matter containing quotations with references to literature, in conjunction with the abstracts, thus enabling the reader to refer to the original papers. This will be much appreciated by investigators and others as well.

Considerable matter contained in the preceding editions, which added to the bulk of the book without materially enhancing its value, has been eliminated, such as the descriptions of genera and the extended statements regarding the therapeutic action of drugs. A large amount of new matter covering a wide range of subjects has been added, and the book may be said to be more indispensable than ever as a reference work. It is not only the oldest and latest commentary of the Pharmacopœia, but it is laden with the freshness of a new book.

While the book has been for the most part brought up to date, there are some advances that have been overlooked, as in the case of Spigelia, where the references unfortunately stop with the work of Greenish published some years ago.

Works of this kind, like encyclopedias, are necessary not only in the library of the physician but in the laboratory of the pharmacist. They supplement the Pharmacopœia and the various text-books, and, with the increasing literature, serve more useful purpose than ever.

THE PHILADELPHIA BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The regular stated meeting of the Philadelphia Branch of the American Pharmaceutical Association was held on the evening of Tuesday, May 7, 1907, and was devoted to a discussion of the proposed reorganization of the American Pharmaceutical Association.

Dr. Albert M. Eaton presented a communication on "The Local Society as the unit of the American Medical Association." Dr. Eaton briefly reviewed the history of the medical organizations of the United States and described the conditions that led up to the organization of the American Medical Association. He exhibited copies of the Journals and of the "Roster" received by each local member of the Association and called attention to the advantages of co-operation in the scientific work of the local societies. He called attention to the really excellent work that is being done by the Council on Pharmacy and Chemistry of the American Medical Association, and in conclusion expressed the hope that the cordial relations now existing between the profession of medicine and of pharmacy would be further developed and that the near future would witness an active co-operation on the part of members of the two professions who, together would wield a great influence for right and the abatement of abuses and evil.

Mr. C. E. Vanderkleed then read a paper on "The American Chemical Society and the Work of its Local Sections." Mr. Vanderkleed said that the American Chemical Society was thirty-one years old and that during the first fourteen years it maintained but a precarious existence. The year 1891 witnessed the introduction of the local sections and this innovation brought with it a steady and rather rapid increase in membership and usefulness. At the present time there are twenty-two local sections and the society has a total membership of upwards of 3,000 chemists in various parts of the United States. Mr. Vanderkleed called attention to copies of the publications of the American Chemical Society and described, at some length, the machinery of the society, the relations of the local sections to the parent society and the semi-annual meetings of the latter. Mr. Vanderkleed pointed out a number of points of advantage possessed by the machinery of the American Chemical Society over that of the American Pharmaceutical Association, and in conclusion urged that membership in the latter Association should be looked upon in the nature of a patriotic duty. The development of the professional spirit he held to be of even greater importance than the perfection of the machinery of an organization, as the latter could be but of secondary importance to the spirit that was back of it.

Dr. Henry P. Hynson, of Baltimore, outlined what he was pleased to term a readjustment of the present machinery of the American Pharmaceutical Association. He believed it to be wise to "hold fast to that which is good" and to eliminate only the superfluities and the objectionable features. The preamble and Constitution of the American Pharmaceutical Association he believed to be broad and strong, though many of the subsequently introduced by-laws were ludicrous and more or less objectionable.

The secretary read communications from Prof. Edward Kremers, Prof. C. S. N. Hallberg and Dr. H. N. Whelpley and also presented an outline scheme for the reorganization of the American Pharmaceutical Association.

The question was further discussed by Dr. Eaton and by Messrs. Blair, Kraemer, Hynson, Hunsberger, Pollard, Hoch, Riegel, Wilbert, Staudt, McIntyre and Vanderkleed.

M. I. WILBERT, *Secretary.*

PHILADELPHIA COLLEGE OF PHARMACY.

THE EIGHTY-SIXTH ANNUAL COMMENCEMENT.

The eighty-sixth annual commencement of the Philadelphia College of Pharmacy was held in the American Academy of Music, corner of Broad and Locust Streets, Thursday evening, May 16th. After prayer by the Rev. R. Marshall Harrison, D.D., the degrees were conferred by the President of the College, Howard B. French.

The following are the names of those receiving the degree of Doctor in Pharmacy (P. D.), together with the subjects of their theses:

Name.	*Thesis.*	*State or Country.*
Armstrong, William Moore,	Food and Drugs Act,	Pennsylvania
Arnold, Mark Heikes,	Syrupus Acidi Citrici,	Pennsylvania
Axilbund, Samuel,	Miscible Fluid Extract of Grindelia,	Pennsylvania
Bailey, Ralph John,	Benzosulphinidum,	Pennsylvania
Bair, Schafer Bowers,	Antiseptics and Germicides,	New Jersey
Beam, William Thomas,	Compound Syrup of Hypophosphites,	West Virginia
Bear, John Decator,	Glycerin Suppository Containers,	Virginia
Becker, Maxw. Montefiore,	Cold Cream,	Pennsylvania
Bender, Arthur Clar., P. C.,	Saponin of the Root of Phytolacca Decandra,	Iowa
Billings, Oliver George,	Acidum Nitrohydrochloricum,	Pennsylvania
Blalock, Jesse Nelson,	Acacia,	Washington
Bolich, Harry Clayton,	Urinalysis,	Pennsylvania
Bomberger, Harry Jennings,	Cod Liver Oil,	Pennsylvania
Bonner, J. T. Wellington,	Nux Vomica and Its Alkaloid Strychnine,	Connecticut
Bosch, Oscar Anthony,	The Estimation of Camphor in Spirit of Camphor,	Pennsylvania
Bramer, Irving Daniel,	The Manufacture of Milk Sugar,	New York
Broadbelt, G. Harold, P. C.,	Adulteration and Substitution,	Pennsylvania
Brown, Peter Ray,	Castor Oil,	New York
Browne, Roy Hastings,	Products of the Destructive Distillation of Wood,	Nova Scotia
Cable, Jesse George,	Methyl Alcohol,	Pennsylvania
Carrington, Charles Robert,	Cornus Circinata,	Pennsylvania
Coleman, Frank Arthur,	Rhamnus Purshiana,	New Jersey
Coles, Percy Arthur,	The Need of the Testing of Drugs,	Pennsylvania
Condra, James O'Brien,	Drugs Found Around Philadelphia,	Pennsylvania
Cranston, James Bearl,	Althæa,	Pennsylvania
Devine, Joseph Matthew,	Antiseptics,	Pennsylvania
Dougherty, Jos. Thomas,	The Progress of Chemistry,	Pennsylvania
Eberhart, Henry Winfield,	Action of a Bacteria Ferment on Starch,	Ohio
Eidam, Frank,	Infusions,	Pennsylvania

Name.	*Thesis.*	*State or Country.*
Eisenhower, Jas. S. Dallas,	Rubber,	Pennsylvania
Emerson, John Carl,	Zincum,	Missouri
Fekula, Jos. Harry, P. C.,	Drug Abuses,	Pennsylvania
Feldman, Samuel Haimon,	Acidum Hydrochloricum Dilutum,	Russia
Ferguson, Miss Susan E.,	Glycyrrhiza,	New Jersey
Fuser, Benjamin Louis,	Deterioration and Preservation of Chemicals,	Missouri
Gasser, Ira George,	Ferric Scale Salts of the U. S. Pharmacopœia,	Pennsylvania
Graeff, Raymond Newhard,	Milk,	Pennsylvania
Gregory, Wm. Ellsworth,	Emulsum Phenylis Salicylatis,	Pennsylvania
Gruenwald, Otto Arthur,	Industrial Alcohol,	Germany
Guest, Justice Black,	Sugar,	New Jersey
Hall, Lionel Wayne,	Physical and Systematic Botany,	Maryland
Hansen, Charles William,	Corks,	New York
Harrison, William John,	Natural and Artificial Alkaloids of Cinchona,	Pennsylvania
Hay, Alvah James,	Chemistry of Gums,	Pennsylvania
Hilton, Norris Hepburn,	Capsules,	Pennsylvania
Hitzelberger, George Ed.,	The Bunsen Burner,	New York
Holland, George Samuel,	Compound Solution of Cresol and Compound Solution Sodium Phosphate,	Pennsylvania
Houser, Daniel Jefferson,	Pharmacy,	Pennsylvania
Kennedy, Charles Francis,	Coal Tar,	Pennsylvania
Kinney, Floyd Carroll,	Cascara Sagrada,	Pennsylvania
Koebert, Jacob Frank,	Drug Store Packages,	Pennsylvania
Koehler, Arthur Glenn,	Tobacco,	Ohio
Lamas, Fernando,	Carica Papaya,	Cuba
Lane, Paul Stewart,	Syrupus Acidi Hydriodici,	Indian Ter.
Lawless, Martin Joseph,	Disinfection,	Pennsylvania
Lebo, Frank Clayton,	Ferrum,	Pennsylvania
Lever, Abraham Wolf,	Energy as Related to Solution and Chemical Affinity,	Russia
Linton, Malcolm Kenneth,	The Dispensing Physician,	Pennsylvania
Longfellow, Lawrence L.,	Stramonium,	Ohio
Lyter, Charles Smith,	Ptomaines,	Pennsylvania
McAllister, James Criswell,	Cataplasma Kaolini,	Pennsylvania
McClure, Clarence Minor,	Magnesii Carbonas,	Ohio
Mackay, John Fraser,	The Pharmacist's Own Preparations,	New Jersey
March, Garfield,	Manufacture of White Lead,	Ohio
Marsh, Frank Florance,	Camphora Monobromata,	Pennsylvania
Martin, Lyman Cleveland,	Cinchona Alkaloids,	S. Carolina
Martin, Roy Edgar,	Lime Water,	Pennsylvania
Messmer, Eugene William,	Acidum Sulphuricum,	Switzerland
Meyer, Hobart Bird,	Aloes,	Pennsylvania
Middlekauff, Homer P.,	Aloes,	Maryland
Mohler, Henry Keller,	The Cultivation of Tobacco,	Pennsylvania
Moore, Fontaine Bruce,	Cinchona,	Arkansas

Name.	*Thesis.*	*State or Country.*
Morehead, Pressley Leland,	The Oxidation of Essential Oils,	Colorado
Muldoon, Ralph Vincent,	Action of Drugs in Heart Disease,	New Jersey
O'Brien, William Cramer,	Estimation of Free Ammonia in Drinking Water,	Pennsylvania
Owens, Albert Henry,	Fluidextract of Senna,	Pennsylvania
Pflaum, Alexander E.,	Tinctura Iodi,	Pennsylvania
Powell, William S.,	Toxicology of Aconite,	Pennsylvania
Powers, Martin Francis,	Camphora,	Pennsylvania
Ranson, John Lester,	Aqua Hamamelidis, U.S.P.,	N. Carolina
Reynolds, Robert Garland,	Oil of Lemon and Its Preservation,	Pennsylvania
Ruhl, Howard Payne,	Piper,	Pennsylvania
Schmidt, Frank Louis, P. C.,	Sodii Phosphas,	W. Virginia
Seibert, Finley Page,	Recovery of Iodine from Spoiled Syrup of Iodide of Iron,	Maryland
Seidman, Harry, P.C.	Acidum Aceticum,	Russia
Shaefer, Edward Frederick,	Analysis of Tinctures of Iodine,	Pennsylvania
Shiffer, Horace Roy,	A Criticism of the National Formulary,	Pennsylvania
Slough, Herbert Elmer,	Terpin Hydrate,	Pennsylvania
Smith, James Vogelsang,	Scopola,	Pennsylvania
Snook, Aura Estes,	Physostigma,	Pennsylvania
Stine, Clair Shaffer,	Mercury,	Pennsylvania
Tallman, Franklin Lewis,	Essence of Pepsin,	New York
Walter, Chas. Frederick W.,	Serum Antidiphthericum,	Germany
Williams, Miss Edyth W.,	Pure Food and Drugs Act as Applied to Pharmacy,	Pennsylvania
Wilt, Harry Ellsworth,	The Eastern Druggist	Pennsylvania
Winand, Frederick Ehrhart,	Ointments,	Pennsylvania
Wright, Edward Stanley,	Assay of Benzaldehyde,	Ontario
Zeisig, Harry Charles,	The Pharmacist's Windows	Pennsylvania

The following are the names of those receiving the degree of Pharmaceutical Chemist (P. C.), together with the subjects of their theses:

Name.	*Thesis.*	*State or Country.*
Belaval, Vasco S.,	Cellulose and Its Industries,	Cuba
Cliffe, Miss Katherine Ella,	The Cohesion Figure of Fixed Oils,	Pennsylvania
Lilly, Eli,	The Comparative Physiological Effects of Several Varieties of Cannabis Sativa,	Indiana
Weaver, John Dobney,	Official Troches,	Indiana

The following members of the class were awarded the certificate of Proficiency in Chemistry:

Name.	*State.*
Black, Raymond D.,	New Jersey
Hampton, Powell,	Pennsylvania
Lord, George W., Jr.,	New Jersey
Oesterle, Joseph Frank,	Pennsylvania
Williams, Waldo J.,	Pennsylvania

There were one hundred and seven members of the graduating class, coming from the various States and countries as follows:

Arkansas, 1; Colorado, 1; Connecticut, 1; Cuba, 2; Germany, 2; Iowa, 1; Indian Territory, 1; Indiana, 2; Maryland, 3; Missouri, 2; New Jersey, 8; New York, 5; North Carolina, 1; Nova Scotia, 1; Ohio, 5; Ontario, 1; Pennsylvania, 60; Porto Rico, 1; Russia, 3; South Carolina, 1; Switzerland, 1; Virginia, 1; Washington, 1; West Virginia, 2.

The valedictory address was delivered by Hon. J. Hampton Moore.

AWARD OF PRIZES.

The dean, Prof. Joseph P. Remington, announced that the following members of the class received the grade of distinguished: William Thomas Beam, Clarence Minor McClure, and Henry Keller Mohler; and the following that of meritorious: Paul Stewart Lane, Eli Lilly, Robert Garland Reynolds and James Vogelsang Smith.

THE PROCTER PRIZE of a gold medal and certificate for the highest general average of the class with a meritorious thesis, was awarded to Henry Keller Mohler, the presentation being made by President French.

THE WM. B. WEBB MEMORIAL PRIZE of a gold medal and certificate, offered for the highest general average in the branches of committee, operative pharmacy and specimens, was awarded to William Thomas Beam, the presentation being made by Warren H. Poley. The following graduates received honorable mention in connection therewith: Frank Florance Marsh, Henry Keller Mohler.

THE PHARMACY PRIZE, a gold medal, offered by Prof. Joseph P. Remington for original pharmaceutical work, was awarded to Norris Hepburn Hilton.

THE CHEMISTRY PRIZE of $25, offered by Prof. Samuel P. Sadtler, for knowledge of chemical quantitative analysis, was awarded to Clarence Minor McClure. The following graduate received honorable mention in connection therewith: Edward Stanley Wright.

THE MATERIA MEDICA PRIZE of $25, offered by Prof. Clement B. Lowe, for the best examination in materia medica and in the recognition of materia medica specimens with a meritorious thesis, was awarded to James Vogelsang Smith. The following graduates received honorable mention in connection therewith: Frank Arthur Coleman, Henry Winfield Eberhart, Samuel Haimon Feldman, Paul Stewart Lane, Eli Lilly, Garfield March, and Henry Keller Mohler.

THE MICROSCOPICAL RESEARCH PRIZE of a Zentmayer microscope, offered by Prof. Henry Kraemer, for the best thesis involving microscopical work, was awarded to Henry Winfield Eberhart. The following graduates received honorable mention in connection therewith: William Thomas Beam, Charles Robert Carrington, Susan Eleanor Ferguson, and Lyman Cleveland Martin.

THE ANALYTICAL CHEMISTRY PRIZE of $25, offered by Prof. Frank X. Moerk for the best work in qualitative and quantitative analysis, was awarded to Jesse George Cable. The following graduate received honorable mention in connection therewith: William Thomas Beam.

THE OPERATIVE PHARMACY PRIZE, $20 in gold, offered by Prof. Joseph P. Remington, for the best examination in operative pharmacy, was awarded to William Thomas Beam. The following graduates received honorable mention in connection therewith: Irving Daniel Bramer, William Ellsworth Gregory, Malcolm Kenneth Linton, John Fraser Mackay, Frank Florance Marsh, Henry Keller Mohler, John Lester Ranson, Robert Garland Reynolds, James Vogelsang Smith, and Edward Stanley Wright.

THE MAISCH PRIZE of $20 in gold, offered by Mr. Jacob H. Redsecker, of Lebanon, Pa., for histological knowledge of drugs, was awarded to Charles Robert Carrington, the presentation being made by Joseph L. Lemberger. The following graduates deserved honorable mention in connection therewith: Ralph John Bailey, William Thomas Beam, Katherine Ella Cliffe, Frank Arthur Coleman, Eli Lilly, Garfield March, Henry Keller Mohler, Robert Garland Reynolds, and James Vogelsang Smith.

THE THEORETICAL PHARMACY PRIZE of a Troemner agate prescription balance, offered by Mr. Mahlon N. Kline, for the best examination in theory and practice of pharmacy, was awarded to William Thomas Beam, the presentation being made by William L. Cliffe. The following graduates deserved honorable mention in connection therewith: Katherine Ella Cliffe, George Edward Hitzelberger, Eli Lilly, Clarence Minor McClure, Henry Keller Mohler, Robert Garland Reynolds, and Franklin Lewis Tallman.

The Commercial Training Prize, $20 in gold, offered by Prof. Joseph P. Remington to the graduate who passed the best examination in commercial training at the final examination for the degree, was awarded to Robert Garland Reynolds, the presentation being made by Walter A. Rumsey. The following graduates deserved honorable mention in connection therewith: William Thomas Beam, Katherine Ella Cliffe, Frank Arthur Coleman, Susan Eleanor Ferguson, Fernando Lamas, Paul Stewart Lane, Eli Lilly, Garfield March and Edward Stanley Wright.

The Instructors' Prize of $20 offered by the Instructors of the College, for the highest term average in the branches of pharmacy, chemistry and materia medica, was awarded to Clarence Minor McClure, the presentation being made by Freeman P. Stroup. The following graduates deserved honorable mention in connection therewith: William Thomas Beam, Jesse George Cable, Frank Arthur Coleman, Samuel Haimon Feldman, Paul Stewart Lane, Eli Lilly, Henry Keller Mohler, Edward Frederick Schaefer, Horace Roy Shiffer, und Aura Estes Snook.

The Pharmacy Quiz Prize, one year's membership in the American Pharmaceutical Association, offered by Prof. Charles H. LaWall, for the best term work in theory and practice of pharmacy, was awarded to Clarence Minor McClure. The following graduates deserved honorable mention in connection therewith: William Thomas Beam, Jesse George Cable, Frank Arthur Coleman, Samuel Haimon Feldman, Paul Stewart Lane, Eli Lilly, Henry Keller Mohler, and Harry Charles Zeisig.

The Kappa Psi Fraternity Prize of a Gold Medal, offered by the Eta Chapter of the Kappa Psi Fraternity to the graduate making the highest general average during the senior course at the College, was awarded to Henry Keller Mohler, the presentation being made by E. Fullerton Cook. The following graduates deserved honorable mention in connection therewith: William Thomas Beam, Paul Stewart Lane, Eli Lilly, Clarence Minor McClure, Robert Garland Reynolds, and James Vogelsang Smith.

COMPLIMENTARY SUPPER GIVEN BY THE FACULTY.

On Wednesday evening, May 15th, a complimentary supper was tendered the graduating class by members of the Faculty. The supper was given in the Museum of the college, and some of the officers and members of the college were among the invited guests, as also some of the visiting alumni. Professor Remington, dean of the Faculty, acted as toastmaster, and among those who responded were the members of the Faculty and instructors, some of the members of the Board of Trustees, visiting guests, and a large number of the members of the graduating class.

BACCALAUREATE SERMON.

Baccalaureate services were held in the Church of St. Luke and The Epiphany, on Sunday afternoon, May 12th, the sermon being delivered by the rector, the Rev. David M. Steele.

ANNUAL MEETING AND RECEPTION OF ALUMNI ASSOCIATION.

The forty-third annual meeting of the Alumni Association was held in Alumni Hall, Monday, May 13th, at 2.30 P.M., with the President, John D. Burg, in the chair. Following the annual address of the President were the reports of officers and standing committees. The annual election of officers was then held and resulted as follows: President, Charles H. LaWall; First Vice-President, E. Fullerton Cook; Second Vice-President, Clarence H. Campbell; Recording Secretary, Joseph W. England; Treasurer, C. Carroll Meyer; Corresponding Secretary, David J. Reese; Members of the Board of Directors, Miss Florence Yaple, Otto W. Osterlund, John W. Frey, C. L. Bonta, and William E. Lee.

The annual reception given by the Association to the members of the graduating class was held on the evening of the same day in the College Museum, with President Burg in the chair. Introductory remarks were made by the President, after which the roll of new members elected during 1906–07 was called.

The prizes offered by the Association were awarded as follows:—

The Alumni Gold Medal for the best general average of the class of 1907 was awarded to Henry Keller Mohler, the presentation being made by President-elect Charles H. LaWall.

The Alumni Prize Certificates, offered for the highest grades in the several branches, were awarded as follows, Prof. Clement B. Lowe making the presentation: In Pharmacy, to William Thomas Beam; in Chemistry, to Clarence Minor McClure; in Materia

Medica, to James Vogelsang Smith; in General Pharmacy (committee), to Henry Keller Mohler; in Operative Pharmacy, to William Thomas Beam; in Analytical Chemistry, to Frank Arthur Coleman, and in Specimens, to James Vogelsang Smith.

The Alumni Silver Medal was awarded to Ralph Nelden for the best general average in the second-year examination, and was presented by E. Fullerton Cook.

The Alumni Bronze Medal was awarded to Ralph Lowell Mundhenk for the best general average in the first-year examination, and was presented by Clarence H. Campbell.

The Class Oration was delivered by Harry Ellsworth Wilt; the Class Poem, by William Moore Armstrong; the Class History, by James Smedmer Dallas Eisenhower; and the Prophecy was given by William Cramer O'Brien.

ALUMNI REUNION AND BANQUET.

The Alumni Reunion and Banquet, held at the Hotel Walton, on Tuesday evening, May 14th, will long be remembered as one of the most notable gatherings ever held by the Association, not only on account of the large number of alumni present, but also because of the interest which centered in the presentation to the College by the Class of 1906, on this occasion, of an oil portrait of Professor Remington in recognition of the completion by him of thirty-five years of service as a teacher in this institution. The movement to thus honor Professor Remington was the outcome of a toast made by Professor Kraemer at the Faculty Dinner, held May 16, 1906.

The Committee having the Banquet in charge was composed of the following alumni:

C. A. Mayo, New York; H. V. Arny, Cleveland; L. E. Sayre, Lawrence, Kans.; J. K. Lilly, Indianapolis; William Mittelbach, Boonville, Mo.; E. G. Eberle, Dallas, Tex.; C. S. N. Hallberg, Chicago; L. L. Walton, Williamsport, Pa.; H. Lionel Meredith, Hagerstown, Md.; L. C. Hopp, Cleveland; F. P. Stroup, C. H. LaWall, T. H. Potts, W. V. Smith, H. J. Sunday, R. H. Lackey, D. J. Reese, W. L. Cliffe, Philadelphia; H. C. Blair, Secretary and Treasurer; Henry Kraemer, Chairman.

Prof. Henry Kraemer acted as toastmaster, and the dinner was enlivened by songs, class cheers, and instrumental music. The first toast, "Our Alumni," was responded to by Thomas H. Potts. The portrait of Professor Remington was then presented on behalf of the Class of 1906 by Harvey J. Sunday, and was accepted on behalf of the College by President Howard B. French.

In presenting the portrait Dr. Sunday spoke as follows:

This event of Alumni Reunion being held once a year, recalls to our memories fond and sacred duties performed at college while endeavoring to master the arts of pharmacy.

These duties, though happening many years ago to some of you, also recall the men who labored hard and long, spending wearisome hours endeavoring to raise pharmacy to the standard it has reached to-day.

We, as the Class of '06, being ushered out just one year ago, have deep-rooted in our memories cherished fancies of the instructors who so nobly and willingly guided us through our college years. These fancies, originating as they did through the ardent efforts of our instructors, developed into appreciation, and *then* into a desire for an opportunity to show and prove this appreciation. Several ways were suggested, but none satisfactorily until Professor Kraemer, who always proves "the man of the hour," came to the rescue, his suggestion being an "oil painting" of our noble Dean, Joseph P. Remington.

The opportunity was grasped at once, and before twenty-four hours had passed the suggestion had been presented to the Class Society, acted upon favorably, and a committee appointed to make the necessary arrangements.

To-night we are here to bring before you the results of our efforts; although one year has gone by and has brought with it its reverses and discouragements both in business and home life; our effort has been crowned with a remembrance which shall be handed down from generation to generation and shall adorn the walls of the Philadelphia College of Pharmacy until its last color shall fade from view.

Our purpose seemed to us from the beginning like a huge mountain full of rocks and narrow passage-ways and thronged with difficulties which at times seemed almost impossible to overcome; but determined efforts and encouraging aids of Prof. Henry Kraemer guided us on and accomplished for us the painting which is before you now.

This painting is by one of Philadelphia's foremost artists, Mr. Henry R. Rittenberg, whose work is known the Union over, and whose name is used by every lover of art.

As the representative of the '06 Class I wish to present to the Philadelphia College of Pharmacy through its President, Mr. Howard B. French, this oil painting of Prof. Joseph Price Remington as a token of esteem and friendship.

May its beauty and artistic value, as it hangs upon the college wall, beam forth with enthusiasm and impress upon its admirers the true value of perseverance in accomplishing a purpose; this is found in the life of Joseph P. Remington. May it also impress upon the coming Alumni the true college spirit in which it had its origin and to which end it was so gloriously and bravely completed.

And now in behalf of the '06 Class I wish to extend to you, Professor Remington, our most hearty congratulations on your thirty-fifth year as a member of the College Faculty. May many more years be added to your life and prove as successful as the ones you have just passed through. May health and happiness attend you to the last, and when death does claim this flesh and bone, your name shall live on as a monument in pharmacy until time shall be no more.

John D. Burg, as president of the Alumni Association, followed with some remarks, after which a number of letters and telegrams conveying congratulations and fraternal greetings were read. Professor Remington being called upon at this point, expressed his very great appreciation of the honor conferred upon him, and of the pleasure which he had derived as a teacher during the years that he had been connected with the college.

Responses were also made to the following set toasts: "Our Faculty," by Prof. Samuel P. Sadtler; "Our Sister Colleges," by Dr. John F. Hancock, of Baltimore; "Our Alma Mater," by James T. Shinn; "The United States Pharmacopœia," by Dr. John Marshall; "The American Pharmaceutical Association," by Joseph L. Lemberger, of Lebanon, Pa.; "The Pennsylvania Pharmaceutical Association," by J. D. Thomas, of Scranton, Pa.; "The National Association of Retail Druggists," by Warren H. Poley; "The Medical Profession," by Dr. Horatio C. Wood, Jr.; "Boards of Pharmacy," by William L. Cliffe; "Pharmaceutical Manufacturers," by J. K. Lilly, of Indianapolis; "Wholesale Druggists," by Mahlon N. Kline; "The Pharmaceutical Press," by Caswell A. Mayo, of New York.

The Rev. David M. Steele and Dr. William P. Wilson, both of Philadelphia, were also invited to speak.

The artist, Mr. Henry R. Rittenberg, who painted the portrait of Professor Remington, was present, but was called away before being called upon to speak. Mr. Rittenberg is a well-known Philadelphia artist, having received his training at the Pennsylvania Academy of the Fine Arts, and abroad at the National Academy of Munich.

The following is a complete list of the alumni in attendance and invited guests :—

John H. Allen, Franklin M. Apple, Wilmot Ayers, Jacob M. Baer, J. N. Blalock, Dr. H. Frances Bartlett, M. Becker, William T. Beam, Jacob S. Beetem, P. T. Bienkowski, Russell T. Blackwood, George M. Beringer, Henry C. Blair, Frederick J. Blinzig, C. Halsen Bogert, H. J. Bomberger, Walter T. Butler, C. L. Bonta, P. Ray Brown, D. E. Bransome, John D. Burg, Miss Helen R. Burns, William T. Burke, Miers Busch, J. G. Cable, Milton Campbell, N. A. Cozens, Theodore Campbell, C. S. Cameron, William L. Cliffe, J. B. Cranston, P. A. Coles, E. Fullerton Cook, G. C. Davy, C. W. Dirmitt, Hugh L. DeKalb, R. B. Dickinson, Joseph W. Ehman, Henry W. Eberhart, Franklin W. Earle, George D. Feidt, Miss Erma D. Eadie, William W. Foster, Jr.; Asa Fabian, Miss Jamella Fox, Joseph W. England, W. O. Frailey, Howard B. French, C. Stanley French, Willard Graham, W. H. Gano, Emil Graff, W. B. Goodyear, George A. Gorgas, George C. Goeble, R. N. Graeff, Ira D. Gasser, W. E. Gregory, H. C. Grim, Justice B. Guest, William C. Greenawalt, Mrs. Louisa A. Hance, Edward T. Hahn, Edwin C. Hathaway, C. L. Hay, Dr. Alfred Heineberg, Rufus G. Hinton, John Holcombe, H. C. Hughes, Ambrose Hunsberger, Dr. John F. Hancock, Walter Jessup, Mahlon N. Kline, Edwin H. Kercher, J. F. Koebert, Christopher Koch, John J. Kelley, J. A. Klucher, Prof. Henry Kraemer, Otto Kraus, Charles F. Kramer, John H. Knouse, F. Lamas, Richard H. Lackey, E. J. Lanback, Prof. Charles H. LaWall, Charles Leedom, W. E. Lee, Mrs. W. E. Lee, Joseph L. Lemberger, J. K. Lilly, Eli Lilly, John N. G. Long, J. Bertram Lippincott, L. C. Martin, Prof. Clement B. Lowe, Oliver B. McClements, Thomas J. McElhenie, C. A. Mayo, Dr. John Marshall, E. W. Messmer, Frank E. Morgan, Charles A. Mehring, H. K. Mulford, William McIntyre, H. P. Middlekauff, Dr. A. W. Miller, Roy Miller, R. D. Miller, F. B. Moore, Prof. Frank X. Moerk, Edwin R. Mohler, Miss Katharine J. Musson, Thomas F. Monaghan, William J. Nebig, Charles A. Monaghan, E. L. Newcomb, W. C. O'Brien, M. M. Osborne, C. Carroll Meyer, O. W. Osterlund, H. K. Mohler, Thomas H. Potts, Adam Pfromm, A. E. Pflaum, Warren H. Poley, A J. Pollard, D. G. Potts, W. S. Powell, A. W. Reeve, J. L. Ransom, D. J. Reese, Prof. Joseph P. Remington, Mrs. Joseph P. Remington, Miss Elsie Remington, J. Percy Remington, Henry G. Reuwer, Miss Millicent S. Renshaw, Walter A. Rumsey, George Rhodes, Dr. George D. Rosengarten, H. R. Rittenberg, J. H. Rawlings, Ralph C. Sharadin, Prof. Samuel P. Sadtler, James T. Shinn, Roy H. Shiffer, Richard M. Shoemaker, Walter V. Smith, Freeman P. Stroup, A. J. Staudt, Dr. A. A. G. Starck, Clara S. Stein, S. W. Strunk, Harry L. Stiles, G. H. Summers, Harvey J. Sunday, D. J. Thomas, Rev. David M. Steele, Charles E. Vanderkleed, C. F. W. Walter, John C. Wallace, Frank C. Weber, Isaac M. Weills, Charles A. Weideman, George B. Weideman, F. E. Winand, Thomas S. Wiegand, Miss Berta Whaland, George F. Williams, Edward Wendell, Dr. Horatio C. Wood, Jr.; George S. R. Wright, Martin I. Wilbert, Raymond J. Walther, Miss Edyth W. Williams, E. S. Wright, and Miss Florence Yaple.

The following is a list of the members of the class of 1906 who contributed to the Remington Portrait Fund :—

John Harvey Allen, Robert Bunn Anawalt, Joseph Colson Andrews, Wilmot Ayers, Peter Thomas Bienkowski, Frederick John Blinzig, Clarence Eugene Bragdon, William David Burgoon, Miss Helen Ritz Burns, Franklin Alfred Butler, George Francis Crouse, Milton H. Cunningham, George Covell Davy, George Stanly DuBois, Miss Erma Delia Eadie, Franklin Wallace Earl, Charles Wilson Evans, Harry Miller Fahr, Harvey Peter Feigley, Manuel Fernandez, Ralph Anderson Forrest, William Wetheral Foster, Jr.; Wilbur Bair Goodyear, Lloyd Earl Goss, Charles Peyton Greyer, Herman Charles Grim, William Henry Haines, Godfrey Olin Hancock, Harry Caswell Hughes, Benjamin Russell Hurst, Samuel Miles Irvin, Walter Jessup, Frederick Brauns Kelty, Edwin John Laubach, Harry Ashton Lloyd, Oliver Beckett McClements, Charles Mann, Charles Augustus Mehring, Joaquin Higinio Medrano, George Louis Pfeiffer, Henry George Reuwer, Jr.; Hamilton Russell, William Reuben Shearer, Abraham Milton Shiffer, Joseph Alexander Shrom, James Cochran Stouffer, Harvey James Sunday, Finley Page Seibert, Samuel Early Thorley, Miss Berta Whaland, Henry Woolman Whitacre, Raymond Joseph Walther, Frederick Randolph Yost. Eli Lilly, of the Class of '07, and Mrs. M. M. Gray, of Chicago, both made voluntary contributions to the Fund, and a few other subscriptions were solicited by the Class of '06 in order to make up the amount required, the following being the contributors: Henry B. Gilpin, Frank G. Ryan, Frank Wyeth.

The following is a list of those who sent letters and telegrams:

The Chicago Veteran Druggists' Association, Frank G. Ryan, Detroit; Dr. A. L. Lengfeld, San Francisco; Prof. E. G. Eberle, Dallas, Tex.; Prof. Oscar Oldberg, Northwestern University; Prof. Edgar F. Smith, Vice-provost of the University of Pennsylvania; Prof. James M. Good, St. Louis College of Pharmacy; S. A. D. Sheppard, Treasurer A. Ph. A.; Prof. Charles Caspari, Jr., Secretary A. Ph. A.; Prof. H. H. Rusby, Columbia University; Ewen McIntyre, New York City; Prof. H. M. Whelpley, Secretary United States Pharmacopœial Convention; Evan T. Ellis, Philadelphia; Prof. Maurice A. Miner, Northwestern University; Paul L. Hess, President Missouri State Board of Pharmacy; Dr. Wm. C. Alpers, President New York Branch A. Ph. A.; Wm. J. M. Gordon, Cincinnati; Misses Lulu and Virginia C. Brookes, Waelder, Tex.; Dr. J. C. Falk, St. Louis; Prof. Virgil Coblentz, Columbia University; Dr. Joseph A. Conwell, Vineland, N. J.; John Coleman, Wheeling, West Va.; Nicholas M. Butler, President Columbia University; Prof. John Uri Lloyd; Wilhelm Bodemann, Chicago; Dr. Joseph Jacobs, Atlanta, Ga.; Joseph Redsecker, Lebanon, Pa.; Prof. George C. Diekman, Columbia University; Joseph Helfmann, Detroit; Dr. Harvey W. Wiley, United States Department of Agriculture; Dr. Edward Kremers, University of Wisconsin; Thomas F. Main, secretary School of Pharmacy, Columbia University; Harry B. Mason, editor *Bulletin of Pharmacy;* Thomas P. Cook, New York City; Prof. John Hargreaves, Ontario College of Pharmacy; Charles F. Schleussner, New York City; J. F. Llewellyn, Mexico, Mo.; Dr. G. H. C. Klie, St. Louis; Otto W. Schmidt, Youngstown, O.; Prof. L. E. Sayre, Kansas State University; Alfred I. Cohn, New York City; Dr. M. G. Motter, secretary Board of Trustees United States Pharmacopœia; Prof. Joseph L. Mayer, Brooklyn College of Pharmacy; Prof. E. H. Bartley, Brooklyn; Thomas D. McElhenie, Brooklyn; H. B. Rosengarten, Philadelphia; Prof. J. O. Jordan, Massachusetts College of Pharmacy; F. C. Dodds, secretary Illinois State Board of Pharmacy; Gustavus Balser, New York City; Prof. George F. Payne, Atlanta College of Pharmacy; Prof. J. A. Koch, Pittsburg College of Pharmacy; Dr. Rodney H. True, United States Department of Agriculture; John F. Patton, York, Pa.; Edward Kemp, New York City; Wilbur L. Lafean, Chicago; M. M. Osborne, Elkins Park, Pa.; Prof.

J. M. Coulter, University of Chicago; Prof. W. Simon, University of Maryland; Dr. A. B. Lyons, Detroit; Prof. Daniel Base, University of Maryland; Dr. Reynold W. Wilcox, New York City; Prof. H. P. Hynson, University of Maryland; Prof. E. A. Ruddiman, Vanderbilt University; Prof. C. S. N. Hallberg, University of Illinois. Telegrams were also received from the following graduates residing in Syracuse, N. Y.: David Stolz, Louis Stolz, Wm. J. Ross, Fred. J. Nye, Wm. B. Bunker, Wayne B. Bissell, Edward S. Dawson; from the following located in Dallas, Tex.: J. Connor Chisholm, Samuel Y. Althoff, and Chester A. Duncan; and from Godfrey Olin Hancock and George Du Bois, of Paducah, Ky.

MAY PHARMACEUTICAL MEETING.

The last of the series of Pharmaceutical Meetings for 1906–07 was held on Tuesday afternoon, May 14, 1907, in the Museum of the College, with Mr. Joseph L. Lemberger, of Lebanon, Pa., in the chair.

Prof. Henry Kraemer read an interesting paper commemorative of the centenary of the birth of Louis Agassiz, in the course of which he briefly outlined the life and the achievements of that great naturalist and gave a summary of his influence on the study of the natural sciences in America.

Mr. Ambrose Hunsberger gave a practical demonstration and read a short paper on "Practical Results with National Formulary Preparations." In connection with the practical demonstration Mr. Hunsberger exhibited upwards of twenty of the National Formulary preparations and recounted some of the difficulties he had met with and the success that had followed the introduction of these preparations to the physicians of his neighborhood. One very important suggestion made by Mr. Hunsberger was that in sampling physicians with preparations of this kind it is well to give rather liberal samples, particularly of articles that are at all likely to be useful to the physician or his family. The paper read by Mr. Hunsberger was a particularly helpful one, full of suggestions on the various agencies favoring the introduction of official or open formula preparations and constitutes a strong plea for practical work on the part of retail pharmacists.

Mr. D. J. Thomas, of Scranton, Pa., in discussing this paper, was inclined to question the advisability of pursuing this line of work at the present time, thinking that the rank and file of pharmacists were not prepared to meet the demand for U. S. P. and N. F. preparations. He recounted some experiences that had come to his attention that appeared to indicate that pharmacists in his locality, like pharmacists in other sections, had been remiss in their duty to themselves and their customers, and had not kept themselves posted on the progress of pharmacy along the more practical lines.

He also called attention to several formulas that when followed exactly did not give satisfactory preparations. Among these he enumerated the glycerinated elixir of gentian and the cataplasm of kaolin.

Mr. Lemberger recounted an experience that he had had with the cataplasm of kaolin in which the official article did not compare favorably with one of the proprietary preparations that had been used.

Mr. Wilbert called attention to the fact that kaolin as found on the market differed widely not alone in chemical but also in physical properties, and that considerable care was necessary to get a kaolin that gives a satisfactory preparation using the U. S. P. quantities. He also suggested that it would be practicable for the pharmacist to develop a trade on any special consistency of this cataplasm that was desired by the physician. Not infrequently a physician might desire to use such a cataplasm for a special case, and it was clearly within the pharmacist's province to offer any desired modification.

Mr. T. D. McElhenie, of Brooklyn, N. Y., recounted an experience that he had had with the glycerite of the phosphates of iron, quinine and strychnine of the U. S. P. This preparation, he asserts, tends to precipitate or to form a solid magma. By heating it will redissolve and will mix readily with syrup to form a clear and apparently stable preparation.

Mr. M. I. Wilbert presented a short report on the prospective exhibit of the Philadelphia Branch of the American Pharmaceutical Association at Atlantic City, and in connection therewith showed several samples of granular effervescent salts. Mr. Wilbert said that this exhibit had attracted more widespread attention among physicians than among pharmacists, but felt confident that it would be a success in every way and would prove to be a valuable educational feature and one likely to be repeated in future years.

Prof. Charles H. LaWall read an interesting and highly practical paper on " A Modification of Martin's Butter Color Method", in which he outlined a process for detecting the admixture of artificial coloring matter to spices by extracting them with a mixture of alcohol, carbon disulphide and melted lard or petrolatum.

Mr. J. P. Remington, exhibited an apparatus for the extemporaneous preparation of granular effervescent salts and also exhibited specimen samples of the product.

Mr. M. I. Wilbert presented a report on "Recent Progress in Pharmacy and Materia Medica" (see page 273), and expressed the opinion that the recent decree enjoining the several drug associations from combining to regulate the prices of "patent medicines" would prove to be a factor of great importance to the progress of pharmacy along legitimate lines.

M. I. WILBERT,
Secretary pro tem.

NOTES AND NEWS.

AWARDS AT THE MILAN EXPOSITION.—In connection with the exhibit illustrating researches conducted in the Wellcome Chemical Research Laboratories, a diploma of honor was awarded Dr. F. B. Power, Director of the Laboratories; gold medals to Dr. Power and F. Tutin, and a silver medal to P. E. F. Perrédès.

HENRY B. SLADE.—An interesting review of the scientific work of the late Professor Slade appears in the February number of the *Alumni Monthly*, of Brown University. The author, Dr. Metcalf, states that "in the ten years of active life intervening between his graduation and death he had made his way into the front rank of the young scientists of America." Professor Slade left a good deal of unpublished matter, but the only one of his papers published posthumously was that on "Studies in Plant Mutation," which appeared in this JOURNAL last July. This paper has been extensively reviewed, both in America and abroad, and is probably the one by which Professor Slade will be longest known.

HOWARD B. FRENCH, President of the Philadelphia College of Pharmacy, has been serving as a member of the Board of Public Charities of the State of Pennsylvania for over a year. The position is a very responsible one, as the Board has charge of all the charitable and correctional institutions in the State.

FRANK G. RYAN has been elected president of Parke, Davis & Co. to succeed the late Theodore D. Buhl. Professor Ryan was formerly connected with the Philadelphia College of Pharmacy, but became associated with Parke, Davis & Co. in June, 1900. He has succeeded from one responsible position to another since allying himself with this firm, and just recently returned from a trip around the world.

PHILADELPHIA COLLEGE OF PHARMACY.

FOOD AND DRUG ANALYSIS COURSE.

A new course for the special instruction and training of Food and Drug Analysts, at the Philadelphia College of Pharmacy.

By reason of the passage of the National Food and Drugs Act on June 30, 1906, there has developed a pressing need for trained chemical and microscopical analysts, not only on the part of the United States Government, for the practical execution of this law, but also on the part of large manufacturing houses and dealers in drugs and chemicals.

The importance of the subject is such that the trustees of the Philadelphia College of Pharmacy have considered it necessary to provide greatly enlarged facilities, and to establish a distinct and independent two years' course to cover this work in a fuller and more complete way.

The regular course on this subject as planned by the Board of Trustees will cover two years of eight months each of *continuous* work, beginning in October of each year.

FIRST YEAR.

In the first year of this course, the students receive parts of the regular didactic chemical instruction given to the students of the first and second years of the regular three-year pharmacy course, as well as portions of the first-year and second-year pharmacy lectures of the same course. In addition to these, weekly exercises in the Botanical and Microscopical Laboratory on plant structure and microscopical technique will be provided, and in the Chemical Laboratory instruction will be given in *qualitative* chemical analysis, and the examination of unknown substances both liquid and solid, as well as a course upon the examination of the pharmacopœial chemicals for identity and purity.

SECOND YEAR.

In the second year the students will attend the complete course on general and pharmaceutical organic chemistry given in the third-year pharmacy course, as well as the supplementary course of lectures in food analysis and adulteration. A course in chemical mathematics is also arranged for the students of this year. In addition, a special course for students of this course only, will be given on the manufacturing processes and products of organic chemistry, as well as a course of lectures on the natural history and geographical distribution of foods and drugs, and a course upon the general medicinal properties of drugs.

All the time not required for these courses of lectures is given to the work of the microscopical and chemical laboratories. In the former, the microscopical study of powdered drugs, spices, foods, fibers, and vegetable products, together with fats and other animal products, is taken up in detail and a full course of technical microscopy is planned in this connection. These lectures and laboratory exercises will be supplemented by a number of excursions to manufacturing establishments and elsewhere.

In the chemical laboratory, the instruction in this year will cover the fundamental methods for gravimetric, volumetric, gasometric and colorimetric processes, and particularly in their application to pharmacopœial chemicals and preparations.

3oo

The different classes of food products will be taken up.

The study of preservative and coloring matters needed in order to detect adulteration and sophistication of food products will also be carried out in fullest degree.

During this second year it is proposed to have in addition a special course of lectures to be given at frequent intervals by experts in different lines covered by the course of instruction, who will constitute a corps of special lecturers chosen because of their acknowledged position and authority in different lines of work. A great variety of important special topics can thus be presented that would be impossible to have in the ordinary lectures and laboratory exercises. It is the intention to cover in this course various lines of manufacturing chemistry as related to food products, and the commerce of staple articles, including the importation and exportation of crude and manufactured products.

QUALIFICATIONS FOR ENTRANCE.

Candidates for this course of instruction will be expected to satisfy the Dean of the Course of their possessing such an amount of previous scholastic education or practical training as to enable them to take up the work of the first year as given.

Those completing the first-year course and graduates of the Philadelphia College of Pharmacy, and other institutions having either a complete course leading to the pharmaceutical degree, or a scientific course leading to the same, will be admitted to the second year of this course in food and drug analysis, on presentation of their diplomas and transcript of their college record and approval of the same by the Dean.

SUMMER PREPARATORY COURSE.

Recognizing the urgency of the present demand for skilled analysts, and in answer to the expressed desire of many graduates of pharmacy schools to prepare themselves for this work, the trustees have arranged for a summer preparatory course for the spring and summer of 1907, to begin May 20th, and continue until the latter part of September. This is intended to afford graduates and others of mature years and practical experience the opportunity of preparing themselves by a rapid review of the work indicated as belonging to the first year of this course, to enter in the fall of 1907 upon the regular second year of this course.

For all but the most recent graduates this review of the chemical, pharmaceutical, botanical and microscopical work above enumerated is practically indispensable for the successful prosecution of the detailed work of the second year.

FEES.

The complete fee for each of the two years of this course, covering all lectures and laboratory instruction, shall be $150.

The fee for the summer preparatory course shall be $100. The usual matriculation fee of $5 is required of all students in the Philadelphia College of Pharmacy, whether in regular or special courses. This is paid but once, on the entrance of the student to any instruction in the College.

SAMUEL P. SADTLER,
Dean of the Food and Drug Analysis Course.

THE AMERICAN
JOURNAL OF PHARMACY

JULY, 1907.

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ALKALOIDAL ASSAY: A SIMPLE GENERAL METHOD.

By M. H. Webster.

Once the identity of a drug or its galenical preparation has been established, the determination of at least its total alkaloids presents no more difficulties than that of a similar amount of metallic bases. The concordance of results obtained may be favorably compared with data relating to the analysis of soils or foods—indeed, comparison with those of, for instance, methyl alcohol in grain spirit, or fusel oil in beverages, would be somewhat invidious.

Although differing widely in their molecular structure, the alkaloids have many properties in common, peculiarly adapting them for assay by general methods; advantage may be taken of the similarity of their behavior towards certain precipitating agents or their properties of combining with the stronger acids to form neutral salts. So far the consensus of opinion favors estimation by means of this latter (basic) property, since with the aid of delicate indicators it is possible to determine the amount of a free alkaloid within three-tenths of a milligramme.

Before these methods can be applied, however, approximate purification of the alkaloid is necessary. Here, again, the pre-eminence of the "shaking out" process is almost universally conceded; taking advantage of the fact that most alkaloids are insoluble in water and soluble in chloroform or ether, and that their salts exhibit contra-distinctive properties towards these solvents, the active principles can be transferred from one solvent to the other until almost the whole of the inert matter of the drug is eliminated.

Simple as the principle is, great difficulties are met with in its practical application. When the two immiscible liquids are thoroughly shaken together they become minutely divided and, presenting the maximum of surface to each other, are thus in a favorable condition to exert their respective selective properties. The presence of resin, fat, gum or other colloidal bodies scarcely affects the solubilities of the alkaloids and their salts, but the increased viscosity of the fluids tends to prevent the intimate contact necessary for their transference from one solvent to the other unless by prolonged and vigorous agitation. But such treatment often results in the formation of an inseparable emulsion and the assay process cannot be completed.

Emulsification then is one of the objectionable features of the shaking out process as usually applied. In order to prevent the formation of emulsions the U. S. P. modifies the proportions of the solvents to suit the extractive matter characteristic of different drugs. Inasmuch, however, as the amounts of these inert substances differ in the products of similar drugs, it is often necessary to further modify the quantities of solvent to suit the particular preparation in hand. Alcohol is often present in a preparation or it may be added; it increases the mobility of the aqueous layer and tends to prevent emulsification. Its drawback is likewise two-fold; it decreases the ratio of solubility and sometimes permits of sufficient coloring matter being carried through to seriously impair the delicacy of the color changes in any final titration.

In the last stage of this assay process the purified "ethereal" solution of free alkaloid is warmed to dissipate the solvent together with any adherent ammonia, leaving the alkaloid in a suitable condition for weighing or titrating. The application of heat to free alkaloids under these conditions is liable to occasion loss from various causes: reactions with chloroform, hydrolysis of cocain, evaporation of coniine, spurting of strychnine, and more or less resinification of alkaloids in general. It would be preferable to simply shake the final "ethereal" extract with standard acid and so estimate its alkaloidal content. Such procedure has often been mooted and its advisability has recently been emphasized by Gordin.[1]

The chief difficulty is the elimination of traces of ammonia which is ever present, as salts, in drugs and their preparations, and, being liberated by a fixed alkali, is transferred in part to the ethereal extract.

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[1] Amer. Journ. Phar., Vol. 78, p. 458

In some cases, and notably when the alkaloidal residue is dirty, traces of ammonia adhere to the extractive even after evaporation to almost dryness.

Such then are the principal difficulties of the shaking out process: the occurrence of emulsions, and the presence of ammonia.

The breaking up of emulsions may be assisted in numerous ways. Interesting and ingenious as some of these methods are, it may be more advisable to occupy oneself with the problem of entirely preventing their formation.

With regard to the elimination of ammonia it was thought that the great ammonia capacity of water compared with that of the volatile solvents might be taken advantage of, and the following experiment was conducted with a view to fixing the possibilities in that direction :—

To a separator containing 15 c.c. of water and 10 c.c. of chloroform, five drops of ammonia water were added and the mixture was shaken. After complete separation the chloroform was shaken through separators 2, 3, 4 and 5 in succession, each of which contained 5 c.c. of water, and finally rejected. Three subsequent 10 c.c. portions of chloroform followed the same route in like manner. For neutralization, separators 3, 4 and 5 required of $\frac{N}{50}$ H_2SO_4, 2·5 c.c., 0·4 c.c. and 0·05 c.c. respectively. It will be seen that in the presence of the merest traces of ammonia this difference in solvent power is not entirely devoid of analytical resources.

The insolubility of ammonium sulphate in strong alcohol suggested precipitation of the ammonia; 5 c.c. of water containing a few centigrammes of this salt was added to 95 c.c. of absolute alcohol. Part of the resulting precipitate was fine enough to pass through four folds of filter paper specially manufactured to retain freshly precipitated barium sulphate. Filtration was eventually effected through an asbestos packed Gooch crucible by pressure. The filtrate indicated by nesslerizing 0·00001 gramme NH_3 per cubic centimeter. On attempting, however, to precipitate the ammonia as sulphate from a solution of ammonium acetate in 95 per cent. alcohol by means of sulphuric acid, it was found that while the free acetic acid scarcely affected the precipitation, the slightest excess of sulphuric acid did so by rendering the salt comparatively soluble.

It was thought that the precipitation of ammonia might be accomplished by excess of tartaric acid. Accordingly to a similar alcoholic solution of ammonium acetate excess of that acid was added. Bitartrate of ammonium was immediately precipitated in a fine granular form easily retained by cotton wool. Nesslerizing showed 0·00001 gramme of NH_3 per cubic centimeter of the filtrate.

Tartaric acid in excess and sulphuric acid q. s. are therefore equally effective precipitants of NH_3 from alcoholic solution, other considerations must determine the choice; the modifying effect of the faintest excess of sulphuric acid has already been pointed out and the difficulty of preventing its occurrence was found to be practically insurmountable. Apart from the defeat of the original object in view, the presence of free sulphuric acid might injure alkaloids of delicate structure in any subsequent evaporation of the alcohol. Its use was therefore discarded in favor of tartaric acid which offered none of these objections.

There remained the question of the solubility of the alkaloids in strong alcohol containing excess of tartaric acid. Tanner[1] calls attention to the formation of an acid tartrate of morphine which is nearly insoluble in alcohol. Subsequent communications[2] from Dott and Rutherford Hill on the subject give expression to the opinion that alkaloids generally form sparingly soluble acid tartrates analogous to the ammonium salt. This is correct so far as it goes. When alcoholic solution of morphine, for instance, is neutralized by a solution of tartaric acid in the same medium, part of the alkaloids is precipitated as neutral tartrate; and on again adding a similar volume of the tartaric acid solution the mixture becomes pasty from the total precipitation of the acid tartrate of morphine.

The analogy with ammonia, however, ends at that point, since on the addition of a further portion of the tartaric acid solution, or even a little powdered tartaric acid, the precipitated acid tartrate is completely dissolved.

Experiments with other alkaloids led to the conclusion that alkaloidal acid tartrates are soluble in the presence of excess of tartaric acid.

This behavior of the alkaloidal acid tartrates is not mentioned in any journal or reference book to which I have access. It may, therefore, at least, be assumed that the phenomenon is not so well known as that of their insolubility.

On adding then a fluid extract to a large bulk of absolute alcohol containing a decided excess of tartaric acid, practically the whole of the NH_3 will be precipated along with nearly all the albuminous and gummy matter. The filtrate can be evaporated to a solid extract without injuring the alkaloids which may be dissolved with acidified water, leaving behind the resins, chlorophyll and fat.

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[1] *Phar. Journ.*, Jan. 31, 1903, 134.

[2] *Phar. Journ.*, Feb. 7, 1903, 178.

The principle of eliminating inert matter by first rejecting the alcohol-insoluble gums, proteids, etc., and then the water-insoluble fats, resins, etc., is of course not new; it has been applied in the U. S. P. to the assay of colchicum extract, and also, in half measure, to those of tincture of opium and of fluid extracts of aconite and ipecac, but attention may be drawn to a few details necessary for the uniform success of its application:

The alcoholic extract, mentioned in the process detailed below, must be evaporated to almost dryness, preferably in a large shallow basin, which is then cooled by floating on cold water for a few minutes. The subsequent manipulation is simple, in fact the operation is a rather pretty one; 10 c.c. of weak sulphuric acid is added all at once and the basin rotated without stirring. The excess of tartaric acid keeps the resinous matter in a finely divided state affording easy access to the solvent; the particles of insoluble substances remain isolated for some time, but the continuous rotatory movement soon causes them to aggregate and separate in a granular form from the cloudless liquid. On adding a fixed alkali to this liquid portion (transferred to a separator) and vigorously shaking with the immiscible solvent, no emulsification occurs; and, after washing the "ethereal" extract with water in the manner described below, its alkalinity, which is solely due to presence of alkaloid, can be quickly determined.

The assay process is applicable to a wide range of alkaloidal galenicals, and may be accomplished in an hour. The taking of aliquot portions is countenanced in the U.S.P. and in most cases the results suffice. In the table below, column IV shows the result obtained by taking 50 c.c. of the filtrate, and the adjoining column the result on working up the other half. It will be seen that in neither case is the result much more than 2 per cent. away from the average. However, a careful operator will perform the double assay in order to check at once the process and its application.

Since the U.S.P. now sanctions complete extraction of the alkaloids with water-immiscible solvent, in those assays where ether is specified and the total alkaloids can ultimately be extracted with excess of that solvent, the results marked "Total" were obtained by means of a mixture of chloroform and ether.

In the cases of fluid extracts of gelsemium and veratrum where the menstruum is 95 per cent. alcohol, 0·75 gramme of tartaric acid was added directly to 5 c.c. of the fluid extract; the precipitate, if any, filtered off and filter washed with absolute alcohol, etc.

The following table gives a list of the preparations to which the process has, so far, been applied, and also the results compared with those obtained when the principles of the U.S.P. processes were followed:

	U.S.P. Process.[1]		Tartaric Acid Process				
	I Quantity taken.	II Result per cent.	III Quantity taken.	IV First result.	V Second result.	VI Mean.	
Fluid Extracts.—							
Aconite root	10 c.c.	0·403 Total	$\frac{10}{2}$ c.c.	0·402	0·400	0·401	
Belladonna root	"	0·399	"	0·403	0·398	0·4005	
Belladonna leaf	"	0·302	"	0·309	0·301	0·305	
Coca	"	0·504 Ether-sol. 0·60 Total	" "	0·62	0·61	0·615	
Conium fruit	$\frac{10}{2}$ "	0·292 Wt 0·296 $AgNO_3$	" "	0·3136	0·309	0.311	
Conium leaf	$\frac{20}{2}$ "	0·18 Wt 0·11 $AgNO_3$	" "	0·06	0·06	0·06	
Gelsemium			5 "	0·399	0·391		Lyons' equiv. (4·8)[2]
Granatum			$\frac{10}{2}$ "	0·355	0·350	0·352	Lyons' equiv. (139)[2]
Hyoscyamus	20 "	0·076	"	0·087	0·087	0·087	
Ipecacuanha	10 c.c.	1·38 Total	"	1·38	1·38	1·38	Use half specified quantities of weak acid to dissolve and wash alcoholic extract. Use powdered $NaHCO_3$ instead of KOH solution to free alkaloids.
Pilocarpus	"	0·396	"	0·402	0·396	0·399	
Stramonium	"	0·251	"	0·255	0·252	0·253	
Veratrum Viride			5 "	0·35	0·35		Bredemann's eq. (424)[3] By wt. 0·44 per cent.
Solid Extracts.—							
Belladonna root . . .	5 gms.	1·64	$\frac{2}{2}$ gms.	1·71	1·64	1·68	
Belladonna leaf . . .	"	1·418	"	1·44	1·42	1·43	
Conium fruit	$\frac{4}{2}$ "	3·8 Wt 3·3 $AgNO_3$	"	3·4	3·35	3·37	
Conium leaf	$\frac{4}{2}$ "	0·75 Wt 0·51 $AgNO_3$	"	0·431	0·431	0·431	
Hyoscyamus	10 "	0·308	"	0·32	0·30	0·31	
Physostigma	$\frac{1}{2}$ "	1·6 Ether-sol. 2·0 Total	"	1·98	1·95	1·96	Use powdered $NaHCO_3$ instead of KOH solution to free alkaloids.
Stramonium	5 "	0·99	"	1·02	1·00	1·01	

The following gives the process in detail:—

Add gradually 10 c.c. of the fluid extract to 85 c.c. of cold absolute alcohol in which 1·5 grammes of tartaric acid have been previously dissolved; add sufficient absolute alcohol to make 100 c.c. Shake well, then set aside for a few minutes. Filter; transfer 50 c.c. of the filtrate to a shallow porcelain basin of a diameter of 6 inches (15 centimeters) and evaporate carefully on a water bath, rotating the contents of the basin occasionally, and especially towards the end of the evaporation, so that the resulting extract may cover a large portion of the basin. When dry, cool the extract by floating the basin in cold water; add 10 c.c. of half-normal sulphuric acid and rotate the liquid about in the dish until the extract is dissolved or disintegrated; set aside for two minutes. Filter the liquid through a small, firmly packed pledget of cotton-wool previously moistened with water, into a large pear-shaped separator. Rinse the evaporating dish with two successive 5 c.c. portions of water, stirring to disintegrate the insoluble substances, and pass the liquid through the filter. To the separator add 20 c.c. of a mixture of 16 c.c. of chloroform and 4 c.c. of ether; add 4 c.c. or q. s. of 20 per cent. solution of KOH, insert the stopper and shake vigorously. When the fluids have separated draw off the lower layer into a second separator containing 15 c.c. of distilled water and, after agitation and separation as before, transfer the lower layer to a third separator also containing 15 c.c. of distilled water; agitate and allow to separate. Pass the lower layer through a chloroform-moistened pledget of cotton wool into a fourth separator of about 150 c.c. capacity. In the presence of a volatile alkaloid wash the cotton afterwards with 5 c.c. of chloroform; in all cases the stems of the separators should be washed with 1 c.c. of chloroform after the solvent has been run off and the washings added. Repeat the extraction till no more alkaloid is obtained with two or more portions of the immiscible solvent, which finally collect, after washing as before, in separator number 4. To the bulked ethereal extract add excess of $\frac{N}{50}$ or $\frac{N}{100}$ sulphuric acid and shake thoroughly. After complete separation reject the lower layer; add cochineal T. S. or solution of iodeosin in water-saturated ether and titrate back with $\frac{N}{50}$ sodium hydroxide solution.

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[1] Modified if necessary.

[2] "Assay of Drugs," Lyons.

[3] P.A.P.A., 1906, 936. Ex. *Apoth. Ztg.*, xxi, Nos. 5 and 6 (1906), 41 and 53.

For solid extracts.—Dissolve 2 grammes of the extract in 10 c.c. 50 per cent. alcohol and treat as a fluid extract.

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THE INFLUENCE OF OXYGEN AND OF NITROGEN, AND SUNLIGHT AND DARKNESS ON OLIVE OIL AS AFFECTING THE IODINE AND SAPONIFICATION NUMBERS AND THE PRODUCTION OF RANCIDITY.

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The variations of the iodine and saponification numbers of olive oil have led us to examine into the influence of such factors as oxygen, nitrogen, direct sunlight, diffused sunlight and darkness as affecting the analytical constants and at the same time their influence upon the production of rancidity. The variations are fairly large and may possibly be attributed to the length of time the oil has been exposed to the action of the oxygen of the air. As examples of variations it may be cited that v. Hübl[1] found on examining twenty specimens of olive oil that the iodine number ranged between 81·6 and 84·5. Negri and Fabris[2] as a result of the examination of one hundred specimens of olive oil found the maximum iodine number to be 88. Sherman[3] gives the range of iodine number as being between 78–90, and the saponification number between 186–196. Wiley[4] states that when the iodine number is above 89 or 90 there may be suspicion of the oil having been adulterated. Sherman and Falk[5] examined a specimen of fresh olive oil and found the iodine number to be 83·8, and the same oil, after standing several months, with occasional shaking, in an uncorked bottle, loosely covered to exclude dust, and frequently exposed to direct sunlight, yielded an iodine number of 77·4, thus showing that exposure to air and sunlight acts on the oil with the effect of decreasing the iodine number. Ulzer and Klimont[6] give the iodine number as ranging between 79–91·5 (mostly 83), and the saponification number as ranging between 188–196. Bujard and Baier[1] give the iodine number as ranging mostly between 79–85, although it has been found to be as high as 90, and the saponification number as ranging between 185–196.

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[1] V. Hübl, Benedikt-Ulzer, Analyse d. Fette u. Wachsarten, p. 690.

[2] Negri and Fabris, *Zeit. f. Analyt. Chemie*, 1894, p. 548.

[3] Sherman, Organic Chemistry. Macmillan Co., 1905, p. 147.

[4] Wiley, Foods and their Adulterations. Blakiston & Co., 1907, p. 403.

[5] Sherman and Falk, *Journ. Amer. Chem. Soc.*, July, 1903, p. 713.

[6] Ulzer und Klimont, Chemie d. Fette. Jul. Springer, 1906, p. 289.

The olive oil employed in our experiments was a new oil of first quality obtained as a direct importation by us from the maker in Sancasciano, Val di Pesa, Italy. It was of a light amber color, slightly tinted green, and its flavor was that of a sweet olive oil. The index of refraction corresponded to that of a pure olive oil.

Pasteur pipette flasks were employed to contain the oil in the experiments. All of the flasks were identical in capacity (100 c.c.) and the amount of oil used in each flask was 20 c.c. The gases were passed through the flasks until all the air was displaced as determined in the case of filling the flask with oxygen by collecting some of the gas issuing from the escape tube of the flask and observing whether it was completely absorbed by an alkaline solution of pyrogallol; and in the case of nitrogen by observing whether an alkaline solution of pyrogallol was no longer discolored by the issuing gas. In this procedure the end of the exit tube of the flask was made to dip below the surface of water which served the purpose of a seal. When the flask was filled with the desired gas both tubes of the flask were sealed by means of a blowpipe flame. In the cases where sterilization was effected the flask, with both tubes plugged with sterilized absorbent cotton, was immersed in boiling water for fifteen minutes at a time on three consecutive days before passing gas into it. Oxygen was obtained by heating pure potassium chlorate. Before conducting the gas into the flask it was passed through a solution of sodium hydroxide and then through a tube containing sterilized absorbent cotton. Nitrogen was obtained by heating a solution of ammonium chloride and potassium nitrite. The gas thus obtained was passed consecutively through solutions of ferrous sulphate, sodium hydroxide and alkaline solution of pyrogallol and then through a tube containing sterilized absorbent cotton before it was conducted into the flask.

Determinations of the iodine number (Hübl) and of the saponification number (Köttstorfer) of the fresh oil were made with the following results:

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[1] Bujard und Baier, Hilfsbuch f. Nahrungsmittelchemiker. Jul. Springer, 1900, p. 101.

Number of Determination.	Iodine Number.		Saponification Number.
1	82·17		192·72
2	82·32		193·19
3	82·49		
4	82·16		
5	82·38		
6	82·13		
Mean	82·27	Mean	192·95

Effect of the temperature of boiling water and sterilization on the oil as affecting the iodine and saponification numbers.

The Pasteur pipette flasks containing the oil, with the tubes plugged with sterilized absorbent cotton, were immersed in boiling water fifteen minutes at a time on three consecutive days.

	Iodine Number.		Saponification Number.
Olive oil before heating	82·27		192·95
Number of Determination.			
1. Olive oil after heating	82·06		181 23
2. Olive oil after heating	80·53		182·57
3. Olive oil after heating	81·03		
4. Olive oil after heating	81·65		
Mean	81·75	Mean	181·90

The flasks used in the above experiment containing a remaining portion of oil were plugged with sterilized absorbent cotton and stood aside at room temperature, exposed to diffused sunlight for a period of three weeks. The oil in this time had lost its green tint and had become practically colorless, and, in addition, had become rancid. At the expiration of three weeks determinations of the iodine and saponification numbers of two of the specimens were made with the following results:

	Iodine Number.		Saponification Number.
Olive oil before heating	82·27		192·95
Number of Determination.			
1. Oil after being heated and on standing three weeks	76·35		192·44
2. Oil after being heated and on standing three weeks	78·97		194·87
Mean	77·66	Mean	193·65

Determinations of the iodine and saponification numbers were then made with oil from a stoppered blue glass bottle from which that used in the heating experiment above described had been obtained and which also had stood three weeks at room temperature exposed to diffused sunlight. This oil had not lost its color nor had it become rancid. On opening the bottle thirteen months afterward it was found that the oil had not lost its color but had become strongly rancid.

	Iodine Number.	Saponification Number.
Fresh olive oil	82·27	192·95
Number of Determination.		
1. Unheated oil which had stood three weeks	81·40	194·16
2. Unheated oil which had stood three weeks	80·73	Lost.
Mean	81·06	

Oil from the same bottle as above, which had stood corked with an air space of about 100 c.c. above the surface of the liquid, gave the following results:

	Iodine Number.	Saponification Number.
Fresh olive oil	82·27	192·95
Number of Determination.		
1. Unheated oil which had stood thirteen months	76·03	181·17
2. Unheated oil which had stood thirteen months	75·61	181·58
Mean	75·82	Mean 181·37

Influence of an atmosphere consisting solely of oxygen as affecting the iodine and saponification numbers of unsterilized and sterilized olive oil in diffused sunlight and in darkness on standing thirteen months:—

	Iodine Number.	Saponification Number.
Fresh olive oil	82·27	192·95
Number of Determination.		
1. Unsterilized, in diffused sunlight	75·06	202·79
2. Same specimen	75·30	201·33
Mean	75·18	Mean 202·06

1.	Unsterilized, in darkness[1]	60·15		246·30
2.	Same specimen	60·16		244·47
	Mean	60·155	Mean	245·38
1.	Sterilized, in diffused sunlight	72·02		207·45
2.	Same specimen	72·76		206·99
	Mean	72·39	Mean	207·22
1.	Sterilized and kept in darkness	73·71		199·57
2.	Same specimen	73·05		200·95
	Mean	73·38	Mean	200·26

All of the above specimens of oil had become very rancid. That which was unsterilized and had been exposed to diffused sunlight retained a slight yellow, tinged with green, color. The unsterilized which had been kept in the dark (seal broken, allowing escape of oxygen) had become colorless. The sterilized which had been exposed to diffused sunlight retained a slight yellow, tinged with green, color, and the sterilized which had been kept in the dark retained a yellow color with a decided greenish tint. On breaking the sealed tube of the flasks an outward pressure, made evident by the escape of gas, was observed.

Influence of an atmosphere consisting solely of nitrogen as affecting the iodine and saponification numbers of unsterilized and sterilized olive oil in diffused sunlight and in darkness on standing thirteen months:—

Number of Determination.		Iodine Number.		Saponification Number.
	Fresh olive oil	82·27		192·95
1.	Unsterilized, in diffused sunlight (1st flask)	81·53		200·00
2.	Same specimen	82·00		200·50
	Mean	81·76		200·25
1.	Unsterilized, in diffused sunlight (2d flask)	83·39		199·25
2.	Same specimen	83·72		199·91
	Mean	83·55	Mean	199·58

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[1] The sealed tube of the flask used in this experiment had been broken at an unknown time during the thirteen months, therefore the experiment is of little value.

1.	Unsterilized, in darkness (1st flask)	81·06		199·30
2.	Same specimen	81·63		199·27
	Mean	81·34	Mean	199·28
1.	Unsterilized, in darkness (2d flask)	83·26		196·75
2.	Same specimen	83·39		195·77
	Mean	83·32		196·26
1.	Sterilized, in diffused sunlight	80·68		210·18
2.	Same specimen	81·70		209·44
	Mean	81·19	Mean	209·81
1.	Sterilized, in darkness	82·02		208·90
2.	Same specimen	82·03		207·23
	Mean	82·025		208·06

Not one of these oils had become rancid. The specimens which had been kept in darkness retained the yellowish color tinted with green originally possessed by the oil, while those which had been kept in diffused sunlight had only slightly lost in color.

To ascertain the effect of atmospheric air in direct sunlight, diffused sunlight and in darkness on the color, the production of rancidity and the iodine and saponification numbers of the unsterilized oil three test tubes were half filled with the oil and plugged with absorbent cotton and stood aside respectively in direct sunlight, diffused sunlight and in darkness for a period of thirteen months. The oil exposed to direct sunlight had become colorless and rancid, that exposed to diffused sunlight retained a barely perceptible greenish-yellow tint and had become rancid, and that which had been kept in a dark place had become colorless and rancid. The iodine and saponification numbers of these oils were determined with the following results:

Number of Determination.		Iodine Number.		Saponification. Number.
	Fresh olive oil	82·27		192·95
1.	In direct sunlight	71·67		197·80
2.	Same specimen	71·50		197·86
	Mean	71·58	Mean	197·83

1.	In diffused sunlight	77·65		275·25
2.	Same specimen	77·21		275·25
	Mean	77·43	Mean	275·25
1.	In darkness	70·30		202·34
2.	Same specimen	70·07		201·52
	Mean	70·18		201·93

The results of the experimentation here detailed demonstrate that the influence of oxygen on olive oil is to decrease the iodine number and at the same time to increase the saponification number. It also acts decidedly towards causing the oil to become rancid, and in addition it diminishes the intensity of color possessed originally by the oil. The unsterilized oil exposed to diffused sunlight yielded a slightly higher iodine number than the sterilized oil exposed to diffused sunlight, but the latter oil gave a slightly higher saponification number. The sterilized oil kept in darkness gave a slightly higher iodine number than the sterilized oil exposed to diffused sunlight, while the latter gave a somewhat higher saponification number than the sterilized oil kept in darkness.

As to the influence of nitrogen on the iodine and saponification numbers the experiments show that whether under conditions of sterilization or unsterilization practically no change is caused in the iodine number, but in the sterilized oil in the case of nitrogen, as well as in the case of oxygen, there is an increase in the saponification number. This is probably not due to any action of the nitrogen or oxygen upon the oil, but to a cleavage of a portion of the oil that may occur at the temperature at which sterilization was effected. In every case with the flask containing an atmosphere consisting wholly of nitrogen the oil remained sweet and without the slightest indication of its having become rancid.

Winckel,[1] from experiments performed with oleic acid, has come to the conclusion that fats do not become rancid because of the action of enzymes, but that of first importance in the production of rancidity is the oxidizing action of oxygen. The experiments described in this article confirm the view of Winckel. Our experiments show that light and moisture appear to have no influence upon the oil becoming rancid, because the flasks containing the oil and nitrogen were kept in the light and in the dark and the atmosphere of nitrogen in the flasks was saturated with water vapor and under these conditions the oil did not become rancid. The fact that no rancidity was produced in the sterilized or unsterilized oils in an atmosphere of nitrogen would exclude enzymic action.

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[1] Winckel, *Apoth. Zeitung*, August, 1905, p. 690.

A NOTE ON A SOURCE OF ERROR IN THE USE OF A CERTAIN PETROLEUM ETHER AS AN EXTRACTING MEDIUM.

By John Marshall,
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When commercial petroleum ether has been carefully re-distilled and the fraction between 20° and 50° C. is reserved for use, one is of the belief that no hydrocarbons non-volatile at room temperature are contained in the fraction, and this is usually demonstrated by evaporating a portion of the distillate at room temperature and observing whether any residue remains. The writer on obtaining this fraction from a commercial petroleum ether derived from the Pennsylvania oil-field and, immediately after distillation, evaporating 200 c.c. of the fraction at room temperature, found that no residue remained, but on permitting the remaining portion of the distillate to stand thirty days at room temperature, exposed to diffused sunlight, in a stoppered flask, with an air space of about a litre above the surface of the liquid, and evaporating 200 c.c. of it at room temperature and then over sulphuric acid, a yellowish, cosmoline-like residue weighing 0·0072 gramme remained. The remaining portion of the fluid was re-distilled at 20° to 50° C., and 200 c.c. of the distillate on evaporation left no residue. What remained of the distillate was stood aside in a stoppered flask, as above described, for a period of ten days. At the expiration of the ten days a portion amounting to 200 c.c. was evaporated spontaneously and then over sulphuric acid, with the result that a residue weighing 0·0007 gramme was left. On letting the remaining portion of the distillate stand seventeen days and evaporating 200 c.c. of it, a residue of 0·0016 remained. On making a blank test with 200 c.c. of that which had stood seventeen days by using it in a Soxhlet extractor containing a Schleicher and Schüll fat-free paper thimble filled with sand which had been previously treated with hot hydrochloric acid and thoroughly washed with water and dried, it was found that after conducting the experiment fourteen hours and then filtering the liquid through a fat-free filter and evaporating spontaneously and over sulphuric acid a yellowish, cosmoline-like residue weighing 0·0138 gramme remained.

A volume of 200 c.c. of a distillate which had been twice distilled at 20° to 50° C. and had stood 215 days in a flask, as above described, left on evaporation at room temperature and at 100° C. for two hours a residue of 0·0494 gramme. The residue before being heated at 100° C was yellowish and cosmoline-like in appearance, but on being heated to 100° C. it rapidly turned black and on cooling changed in consistency from a pasty mass to a hard solid.

A volume of 1900 c.c. of a distillate which had been twice distilled at 20° to 50° C., using Glinsky's fractionating bulbs, and which, after the second distillation, had stood 217 hours, was redistilled at 20° to 50° C. All but 135 c.c. distilled over at the temperatures stated and on evaporating this spontaneously a yellowish, cosmoline-like residue remained which, on being heated for three hours at 100° C., turned black. This residue while hot was pasty in character but when cold became hard. It weighed 0·5062 gramme so that this is the quantity of material non-volatile at 100° C. that was contained in the 1900 c.c. of distillate.

A portion of distillate from the above stated 1900 c.c. amounting to a volume of 970 c c. was put aside in a flask for a period of twenty days and then redistilled at 20° to 50° C., using Glinsky's fractionating bulbs, with the result that 120 c.c. refused to distil over at a temperature below 50° C. The 120 c.c. were permitted to evaporate spontaneously and a yellowish, cosmoline-like mass remained which on being heated to 100° C. for three hours turned black and weighed 0·0216 gramme.

In every case of distillation care was exercised that the liquid in the distilling flask should not be in ebullition, but that evaporation should occur in such a manner that the surface of the liquid in the flask remained placid. Weighings were made until constant weight was obtained. The cork stoppers employed had been previously extracted with ethyl ether. In every case there was an open space of about a litre above the surface of the liquid in the corked storage flask and the liquid was exposed to diffused sunlight at room temperature.

The composition of the residues was not determined. Their origin may possibly be due to polymerization. It is evident that a petroleum ether of this sort is not adapted for use in making extractions.

In this connection it may not be out of place to state that some experiments were made with Kahlbaum's "Ethyl ether distilled over sodium," obtained from newly opened, original glass bottles having Kahlbaum's seal attached. In the case of 100 c.c. taken from one bottle and evaporated to dryness spontaneously and then at 100° C., a solid residue of 0·0033 gramme remained, and in the case of 100 c.c. from another bottle of the same importation, a solid residue of 0·0027 gramme remained. The residue was insoluble in 95 per cent. alcohol, slightly soluble in absolute alcohol, soluble in chloroform.

THE LLOYD REACTION AS APPLIED TO HEROIN AND VERATRIN.*

By Daniel W. Fetterolf, Ph.G., M.D., of Philadelphia.

[From the Robert Hare Laboratory of Chemistry, Department of Medicine, University of Pennsylvania.]

The name Lloyd reaction was suggested by Seward W. Williams[1] after investigating the reaction produced by a mixture of the alkaloids hydrastin and morphine, when treated with sulphuric acid and potassium dichromate, described by John Uri Lloyd, in his popular novel, "Stringtown on the Pike." [2] Lloyd used this reaction in the expert testimony at the trial of (his character) Red Head, as a fallacy to the "color reaction" for strychnine, because both yield a blue-violet in the play of colors produced with sulphuric acid and potassium dichromate. This reaction has been investigated by Williams,[1] Wharton,[3] Wangerin,[4] Kebler,[5] Mayer[6] and Fetterolf,[7] all of whom agree in the improbability of this color reaction being mistaken for that produced by strychnine. Mayer also has partially studied it with various alkaloids.

CHEMICALS EMPLOYED.

The chemicals employed in the experiments detailed in this paper were as follows: Chemically pure sulphuric acid and potassium dichromate crystals; alcohol, purified by distillation in a partial vacuum at a temperature between 35° C. and 48° C., having a specific gravity of 0·820 at 15° C., representing 94 per cent. of alcohol by volume; heroin, Bayer's pure, white crystals, having a melting point of 163° C.; veratrin, Powers & Weightman's white amorphous powder, having a melting point of 137° C.; hydrastin, Merck's pure, white, crystalline alkaloid, having a melting point of 236° C.

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* Read before the Philadelphia Section of the American Chemical Society, May 16, 1907.

SOLUTIONS.

Separate solutions of each alkaloid, in alcohol, were made of such strength, so that 1 c.c. contained 3 mgms. of hydrastin and 5 mgms. each of heroin and veratrin.

The smaller proportions were obtained by appropriately diluting the original solutions with alcohol, so that 0·1 c.c. to 0·9 c.c. would contain the desired quantity of the alkaloids.

MIXTURES.

The mixtures were made by measuring, from separate burettes, the volume of alcoholic solution containing the desired weight of the alkaloid, into small, white porcelain dishes, and allowing spontaneous evaporation to occur in an ice chest at 15° to 20° C. In this manner the thoroughly mixed alkaloids were deposited in a small area, except in those cases in which the volume of the mixture measured over 1 c.c.

As pointed out in my previous paper on "The Lloyd Reaction for Morphine and Other Alkaloids,"[8] it is very important to have the entire alkaloidal residue distributed over a very small area to obtain the best results.

TEMPERATURE.

Temperature plays an important rôle in the Lloyd reaction as indicated by Williams. The temperature employed in my experiments in applying the reagents was room temperature between 25° and 30° C.; also between 80° and 90° C. It was found that on gradually increasing the temperature from 30° to 100° C., the play of colors was produced more rapidly and increased in intensity, the best results being obtained between 80° and 90° C. The latter temperature was maintained by the use of a water-bath.

When applying the test at a temperature between 80° C. and 90° C., the dish containing the alkaloidal residue was placed on the water-bath, and while on the water-bath the reagents were added and stirred with a pointed rod glass for five minutes.

EXPERIMENTS.

In a series of experiments with dry mixtures of the alkaloids containing respectively, 1 mgm. of hydrastin to 0·5, 1, 5, 9 and 10 mgms. of heroin, sulphuric acid alone yielded a pink or reddish-brown color in ten to twenty seconds, passing through various shades of violet in three to five minutes, slowly fading away in twenty minutes in the smaller proportions, and in the larger proportions in an hour and a half.

TABLE I.

Ratio Hydrastin to Heroin.	Quantity of Alkaloids in Milligrams.		Sulphuric acid 4 drops (0·1 c.c.) brought in contact with the dry mixture of the alkaloids and slowly stirred, with a pointed glass rod, for five minutes.	A minute fragment of potassium dichromate stirred in 4 drops (0·1 c.c.) of sulphuric acid until the fluid was distinctly yellow; the fluid with the fragment brought in contact with the dry mixture of the alkaloids and slowly stirred, with a pointed glass rod, for five minutes.
	Hydrastin.	Heroin.		
1 to 10	1·0	10·0	Reddish-brown in thirty seconds, changing to pink in fifty seconds, to pale blue-violet in one and one half minutes, passing through various shades of violet in one hour.	Reddish-brown with red-brown streaks following the fragment when drawn through the mixture in five seconds, changing to pink in ten seconds, to pale blue-violet in two minutes, passing through various shades of violet with blue-violet streaks following the fragment, into pink-brown in five minutes.
1 to 9	1·0	9·0	Same as in the one preceding.	Same as in the one preceding, except the blue-violet color was produced in thirty seconds.
1 to 5	1·0	5·0	Same as in the one immediately preceding, except the blue-violet appeared in thirty seconds and changed to red-violet in three minutes.	Same as in the one immediately preceding, except the violet color was permanent for several hours.
1 to 1	1·0	1·0	Pink in ten seconds, changing to blue-violet in fifteen to twenty seconds, passing through various shades of violet to red-violet in five minutes, permanent for one and one-half hours, then slowly disappearing.	Same as in the one immediately preceding, except the final color, which was dark brown to black in eight minutes.
1 to ½	1·0	0·5	Same as in the one immediately preceding, except the blue-violet color appeared in one minute.	Same as in the one immediately preceding.

Mixtures of identical quantitative composition, treated with sulphuric acid and potassium dichromate, yielded a red-brown color, with red-brown streaks following the fragment of potassium dichromate as drawn through the mixture in five seconds, changing to pink in ten seconds, to blue-violet in thirty seconds to two minutes, passing through various shades of violet with blue-violet streaks following the fragment of potassium dichromate. The violet color permanent for several hours in some instances and in others changed to pink-brown or dark-brown to black in five to eight minutes.

The method of application of the tests with the results obtained are given in Table I.

TABLE II.

Ratio Hydrastin to Heroin.	Quantity of Alkaloids in Milligrams.		Sulphuric acid 4 drops (0·1 c.c.) brought in contact with the dry mixture of the alkaloids and slowly stirred, with a pointed glass rod, for five minutes.	A minute fragment of potassium dichromate stirred in 4 drops (0·1 c c.) of sulphuric acid until the fluid was distinctly yellow; the fluid with the fragment brought in contact with the dry mixture of the alkaloids and slowly stirred, with a pointed glass rod, for five minutes.
	Hydrastin.	Heroin.		
10 to 10	10·0	10·0	Reddish-brown to pale pink in ten seconds, changing to blue-violet in twenty seconds, passing through various shades of violet for several hours.	Reddish-brown with red-brown streaks following the fragment when drawn through the mixture in five seconds, changing to pink in ten seconds, to blue-violet in fifteen to twenty seconds, with dark blue-violet streak following the fragment, passing through various shades of violet for several hours.
9 to 1	9·0	1·0	Same as in the one preceding, except the blue-violet color was pale and occurred after the lapse of thirty to forty seconds and disappeared in two hours.	Same as in the one preceding, except the blue-violet color was produced in thirty seconds, passing through various shades of violet to dark-brown in five minutes.
5 to 1	5·0	1·0	Same as in the one immediately preceding.	Same as in the one immediately preceding.
2 to 1	2·0	1·0	Same as in the one immediately preceding.	Same as in the one immediately preceding.
1 to 1	0·01	0·01	*No reaction at room temperature, but between 80°–90° C. a momentary, very pale blue-violet color was produced.	*No reaction at room temperature, nor between 80°–90° C., except the yellow to greenish color of the fragment and acid.

*Only two drops (0·05 c.c.) sulphuric acid employed.

Mixtures of the same quantitative content of alkaloids, at a temperature between 80° C. and 90° C., treated with sulphuric acid alone or with sulphuric acid and potassium dichromate, produced the blue-violet color immediately or in five seconds, quickly changing to blue-violet, passing through various shades of red-violet to violet-red, finally to black, due to charring, in one and a half to fifteen minutes.

The mixture containing the proportion of 1 mgm. of hydrastin to 5 mgms. of heroin gave the most marked play of colors, both at room temperature and between 80° C. and 90° C.

With mixtures of hydrastin and morphine the best results were obtained when they were in the proportion of 1 to 9[9], corresponding to the results obtained by Lloyd.

Another series of mixtures composed respectively of 1 mgm. of heroin to 2, 5, 9 and 10 mgms. of hydrastin, treated with sulphuric acid alone or with sulphuric acid and potassium dichromate, both at room temperature and between 80° C. and 90° C., yielded results somewhat similar to the mixtures previously described. The results are given in Table II.

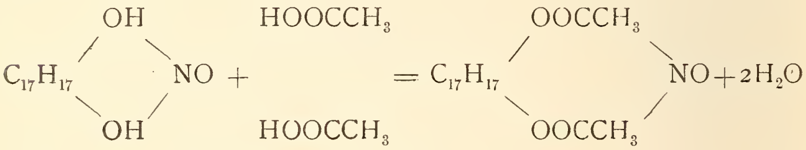
The results obtained from a mixture composed of 10 mgms. of each alkaloid is given in Table II, as is also the limit of the reaction for heroin.

The mixture consisting of 10 mgms. of each alkaloid, heated between 80° C. and 90° C, and treated with sulphuric acid alone, yielded a pale pink color in five seconds, becoming blue-violet in ten seconds, passing through various shades of violet into black with a greenish margin in half an hour, the whole mass assuming a dark green color on cooling. With sulphuric acid and potassium dichromate it gave an immediate blue-violet color, changing to red-violet in fifteen seconds, passing through various shades of violet to black with a greenish margin in five minutes, becoming a dark-green color throughout the entire mass on cooling. A final green color is produced in mixtures composed respectively of 2 mgms. and 5 mgms. of hydrastin to 1, 2, 4, 6, 9, 12 and 15 mgms. of morphin, when treated with sulphuric acid alone, at room temperature, after standing from a half to two hours.[10] Mixtures of hydrastin and apomorphin also yield a green color in the play of colors.[11]

With the Lloyd reaction heroin yields results somewhat similar to morphin and apomorphin. The only difference noted was, that the beginning yellow and brownish-yellow color in the mixtures of morphin, and the yellowish-brown in the mixtures of apomorphin, was substituted by a pink or reddish-brown color with heroin. Also, the green color produced by mixtures of morphin and apomorphin at room temperature was produced in mixtures of heroin only when a large quantity of each alkaloid was present and the temperature was between 80° C. and 90° C. These differences, especially the pink and reddish-brown colors, may serve to distinguish heroin from morphin and apomorphin when applying the Lloyd reaction to alkaloids.

According to my experiments the delicacy of the Lloyd reaction for heroin is not as great as for morphin or apomorphin. A mixture composed of 0·01 mgm. each of hydrastin and morphin yields a pale blue-violet color,[12] and a mixture of 0·001 mgm. each of hydrastin and apomorphin yields a pale red-violet[13] at room temperature. A mixture composed of 0·01 mgm. each of hydrastin and heroin yields no coloration at room temperature, but between 80° C. and 90° C. a momentary, very pale blue-violet color is produced.

That heroin produces results somewhat similar to morphin is not surprising, it being a substitution product of morphin produced by substituting the hydroxyl groups in morphin by the acetic acid complex as shown by the following equation :



$$\mathrm{C_{17}H_{17}}\left\langle\begin{matrix}\mathrm{OH}\\ \\ \mathrm{OH}\end{matrix}\right\rangle\mathrm{NO} + \begin{matrix}\mathrm{HOOCCH_3}\\ \\ \mathrm{HOOCCH_3}\end{matrix} = \mathrm{C_{17}H_{17}}\left\langle\begin{matrix}\mathrm{OOCCH_3}\\ \\ \mathrm{OOCCH_3}\end{matrix}\right\rangle\mathrm{NO}+2\mathrm{H_2O}$$

Morphin. Acetic acid. Heroin (diacetyl morphin).

To ascertain to what extent the colors produced were due to heroin alone the following experiments were made:

Dry residues of heroin containing respectively, 0·1, 0·5 and 1·0 mgm. were treated with sulphuric acid and produced a pale yellow or brownish to pink solution in two to five minutes. The same quantities of heroin treated with sulphuric acid and potassium dichromate yielded only a pale yellowish-brown color, changing to the yellow and greenish colors of the acid and dichromate alone.

A residue containing 0.01 mgm. of heroin treated with acid alone, and with acid and dichromate, was unaffected.

Ten milligrams of solid heroin (not previously dissolved) treated with sulphuric acid yielded a pale yellow solution at room temperature, and between 80° C. and 90° C. a pale yellow solution changing to pale pink in ten seconds. When treated with sulphuric acid and potassium dichromate, nothing but the yellow of the acid and dichromate was produced at room temperature, and between 80° C.

and 90° C. a dirty, brownish-grey color was produced, which changed to green (due to acid and dichromate) in three minutes. Therefore, the red-brown and pink colors produced by mixtures of hydrastin and heroin are due to heroin alone, as hydrastin produces no brown or pink when treated with sulphuric acid alone.

VERATRIN MIXTURES.

Mixtures containing respectively 1 mgm. of hydrastin to 1, 3, and 5 mgms. of veratrin treated with sulphuric acid yielded an immediate brilliant yellow color, changing to brown-yellow to red-brown with a violet-blue margin in three-quarters of a minute, becoming brilliant cherry-red in five minutes, slowly changing to red-violet after several hours, the latter color being permanent more than twenty-four hours. Mixtures of identical quantitative composition treated with sulphuric acid and potassium dichromate produced a brilliant yellow color immediately, changing to brownish-yellow, to red-brown with a blue-violet margin in half a minute, becoming red-violet in three minutes, to pink-brown in five minutes, which persisted several hours.

With mixtures composed respectively of 0·1 mgm. of hydrastin to 0·1, 0·3, 0·5, 0·7 and 1·0 mgm. of veratrin, when treated with sulphuric acid, and with sulphuric acid and potassium dichromate, results similar to those obtained with the previously described mixtures were obtained.

Mixtures composed respectively of 0·01 mgm. of hydrastin to 0·01, 0·06 and 0·09 mgm. of veratrin, treated with sulphuric acid, yielded a yellow color, passing through various shades of yellow to pale pink in five minutes, except in the mixture containing 0·01 mgm., which required twenty minutes to develop a pale-pink tint.

Mixtures composed of the same quantities of the alkaloids as stated, treated with sulphuric acid and potassium dichromate, produced a pink-brown with yellow color disappearing in one-half minute on stirring.

Mixtures composed respectively of 0·001 mgm. of hydrastin to 0·001, 0·006 and 0·009 mgm. of veratrin, when treated with sulphuric acid, produced a very pale yellow color changing to a very pale pink in twenty to thirty minutes. Mixtures of the same quantitative content of alkaloids, treated with sulphuric acid and potassium dichromate, yielded a pale pink color disappearing in fifteen seconds on stirring, except in the mixture containing 0.001 mgm. of each alkaloid, which produced only a momentary pale pink-brown. The same play of colors was produced in mixtures of identical quantities of the alkaloids as stated between 80° and 90° C. except they occurred and disappeared more rapidly.

Veratrin in the same proportions as employed in the mixtures with hydrastin, when treated with sulphuric acid alone, or with sulphuric acid and potassium dichromate, produced the identical play of colors as that yielded by the mixtures, except in the quantity of 0·001 mgm. of veratrin, which gave only a pale yellow color with sulphuric acid.

As small a quantity as 0·008 mgm. of veratrin treated with sulphuric acid produced a pale pink in the play of colors, and 0·001 mgm. (1·65000 grain) when brought to a temperature between 80° and 90° C. yielded a pale pink color in a few seconds.

From the results of these experiments, I believe it justifiable to conclude that veratrin gives no characteristic response to the Lloyd reaction for alkaloids.

The royal purple color obtained by Joseph L. Mayer[6] with a mixture approximating 1 part of hydrastin with 8 parts of veratrin (actual weight not given), is no doubt the same color which I have designated as violet-blue.

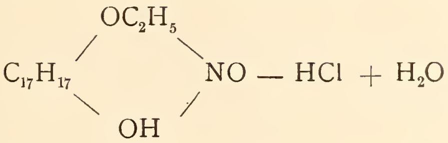
In applying the tests to the mixtures of veratrin and to veratrin alone, the same general plan as that employed in making the tests for heroin was followed.

With the mixtures containing 0·001 mgm. of hydrastin to 0·001, 0·006 and 0·009 mgm. veratrin, also with the same proportions of veratrin alone, only 2 drops of sulphuric acid were employed.

Dr. Wormley[14] gives the delicacy, under ordinary conditions, of the sulphuric-acid test for veratrin as 1·50000 grain and says : "Much less, if collected at one point, and touched with a minute drop of the warmed acid, will yield a distinct coloration." The delicacy of this test for veratrin, at a temperature between 80° and 90° C., may be represented by 1·65000 grain as shown in my experiments.

DIONIN.

A few preliminary trials of the Lloyd reaction with another morphin substitution compound, dionin (ethyl morphin hydrochlorid),



$$C_{17}H_{17}\begin{matrix}OC_2H_5\\ OH\end{matrix}NO - HCl + H_2O$$

produced a more decided bright blue color than the violet obtained with morphin, apomorphin, or heroin. Similar mixtures containing dionin treated with sulphuric acid and potassium dichromate yielded a very decided blue color.

Dionin alone treated with sulphuric acid dissolved with effervescence to a colorless solution undergoing no change in fifteen minutes. Between 80° and 90° C. a pale pink colored solution was produced in five to ten minutes.

Dionin alone treated with sulphuric acid and potassium dichromate yielded no color other than the yellow of the acid and dichromate. Between 80° and 90° C. it produced a dirty green color in five minutes.

No violet or blue color was produced by dionin when treated with sulphuric acid alone or with the acid and dichromate.

This compound and other alkaloids are under further investigation regarding their behavior with the Lloyd reaction.

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[12] Fetterolf: *American Medicine*, Vol. IX, 1905, page 905, table IX.

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[14] Wormley: "Micro-chemistry of Poisons," second edition, page 664.

A MODIFICATION OF MARTIN'S BUTTER COLOR METHOD, AS APPLIED TO THE DETECTION OF ADDED COLORS IN SPICES.

By Charles H. LaWall.

Several authorities on food adulteration state that oil soluble coal-tar dyes and certain added vegetable colors may be detected in such spices as capsicum and mustard by an adaptation of Martin's butter color method, shaking the sample with a mixture of two volumes carbon disulphide and fifteen volumes alcohol. It is further stated that the carbon disulphide dissolves the oil and natural color of the spice while the overlying alcohol layer holds in solution many of the artificial coloring matters that may be employed.

When the test is applied as above described, no separation into layers takes place because there is so much cellular tissue present in proportion to the amount of fixed oil of the spice that a homogeneous pasty mass results if five grammes of the spice are used, while with a smaller quantity, say two grammes, the spice simply remains in suspension without separation into layers.

The principle of Martin's test as applied to butter depends upon the fact that the five grammes of butter which are used in the test combine with and separate out with the carbon disulphide, which under ordinary circumstances is perfectly soluble in alcohol and remains in solution until mixed with at least an equal proportion (to the carbon disulphide used) of some fatty material which is insoluble in alcohol.

The failure of the added spice to properly separate in the test as applied led to the thought that the addition of some fixed oily substance insoluble in alcohol might effect the necessary separation and accordingly the addition of liquid petrolatum and of lard was tried with very satisfactory results in both cases. The separation, as effected by either of these fats, both of which are colorless and thus unobjectionable in their application to this particular test, was both prompt and effective, and the overlying alcohol layer could be decanted easily and subjected to the usual dyeing tests for confirmation of the suspicion afforded by the unusual depth of color of the alcoholic solution.

The test as modified is as follows: Mix 15 cc. alcohol with 2 cc. carbon disulphide and add 2 grammes of the suspected spice; shake thoroughly and then add 5 cc. of melted lard or liquid petrolatum and again shake the mixture vigorously for several minutes. Allow the mixture to separate, decant and filter the alcoholic layer and apply appropriate tests for dissolved colors.

THE AMERICAN MEDICAL ASSOCIATION.

The fifty-eighth annual session of the American Medical Association, held in Atlantic City, N. J., June 4–7, 1907, was fraught with unusual interest to pharmacists.

While the total registration, upwards of four thousand physicians, was not so high as at Boston last year, the attention of the members present was more concentrated on the meetings of the sections, and it is generally conceded that the interest in the scientific programme was even more manifest this year than last.

President Bryant, in his opening address, devoted considerable time to the consideration of "The Need of Honest Drugs." His remarks were largely based on the work that had been done under the auspices of the Health Department of New York City, and the facts and figures quoted, while admittedly deplorable, are fortunately not fully representative of the practices in the better class of pharmacies in this country.

The widespread publicity that will undoubtedly be given to the remarks by President Bryant should lead to more careful control of medicinal substances and must, eventually at least, be of material advantage to that class of pharmacists who are willing to sacrifice the monetary profit to higher ideals and the cultivation of a professional spirit in their vocation.

President Bryant, in speaking of the widespread use of proprietary remedies, called attention to the fact that members of the medical profession "contribute a major share to the inception and use of many medicinal ventures by their indifference or ignorance relating to savory prescribing and also by their thoughtless employment of proprietary medicines."

He extolled the work of the Council on Pharmacy and Chemistry of the American Medical Association and commended its findings to the thoughtful consideration of all medical practitioners.

On this same subject the retiring president, Dr. William J. Mayo, in his address to the House of Delegates, said:

> "The Council on Pharmacy and Chemistry is doing a work of unexampled importance for the men who are now engaged in the practice of medicine. The proprietary-medicine habit of physicians has been in its way even more scandalous than the 'patent-medicine' habit of the public at large, because we are at least supposed to know better. The work of the Council on Pharmacy and Chemistry should be encouraged by every means in our power. We should not only expose the fraudulent character of the claims of the proprietary people, but we should also encourage the honest firms which are making scientific preparations of known composition."

The work of the Council on Pharmacy and Chemistry was also commented on, favorably, in the report of the Board of Trustees and in the addresses of at least several of the presiding officers of the Sections.

The recommendations of the Reference Committee on Reports of Officers, which were unanimously accepted by the House of Delegates, contain the following recommendation of the work of the Council on Pharmacy and Chemistry:

> "We most earnestly commend the work of the Council on Pharmacy and Chemistry and the President's views thereon, and we commend to the Board of Trustees the further and permanent continuance of this work. We most strongly recommend that the members of this Association confine their prescriptions to articles contained in the United States Pharmacopœia, the National Formulary or such as have been approved by the Council on Pharmacy and Chemistry."

The attention of pharmacists, in attendance at the session of the American Medical Association, was more directly centered in the proceedings of the Section on Pharmacology and Therapeutics.

The deliberations of this Section were presided over by Dr. Horatio C. Wood, Jr., and recorded by the widely-known secretary, Prof. C. S. N. Hallberg, of Chicago.

The initial meeting on Tuesday afternoon was devoted to the reading of the address of the chairman, the report of the secretary, and the presentation of an address by Prof. Joseph P. Remington, the chairman of the delegation from the American Pharmaceutical Association. This portion of the programme was followed by a symposium on the United States Pharmacopœia.

The papers presented consisted of the report of a special committee appointed at the meeting in Boston last year, and of a paper on "The United States Pharmacopœia," by Robert A. Hatcher, New York.

The discussion on these several communications was unusually interesting and, at times at least, spirited if not impassioned. Throughout the discussion it was clearly evident, however, that physicians in all parts of the country are awakening to a fuller realization of the uses and the needs of a National Pharmacopœia and there can be but little doubt that the next decennial convention for the revision of the Pharmacopœia will be well attended by delegates thoroughly prepared to discuss the various changes desired in this book.

Following a full and free discussion the Section unanimously adopted resolutions recommending the creation of a special committee to collect suggestions on desirable changes in the Pharmacopœia and to aid in the formation of similar committees by all chartered medical societies.

These resolutions were subsequently referred to the Board of Trustees for final action.

The papers on Wednesday morning were devoted to a discussion of the treatment of cholelithiasis and diabetes mellitus.

On the afternoon of the same day the papers included:

"A Study of the Effect of Drugs on the Coagulation of the Blood," by Drs. Robertson, Illman and Duncan, of Philadelphia.

"A Study of the Bromine Compounds with Especial Reference to Strontium Bromid," by Dr. William J. Robinson, of New York, and a paper on "The Effects of Hydrastis and its Alkaloids on Blood Pressure," by Dr. W. W. Williams, of Cleveland, O.

The meeting on Thursday morning was devoted to a symposium on "Acute Rheumatism," and was a joint session with the Section on Practice.

The closing session on Thursday afternoon was one of unusual interest and will long be remembered by those fortunate enough to be present.

This meeting included the election of officers for the ensuing year and the reading of three papers bearing more or less directly on the widespread use of nostrums by physicians.

The first of these papers: "The Connection of the 'M.D.' with Proprietary Remedies," was written by Dr. H. W. Wiley who had been recalled to Washington by important business. Objection being made to the presentation of this paper it was read by title and was subsequently read in full by Prof. W. A. Puckner, of Chicago, in an impromptu adjourned session of the Section.

This paper was followed, in regular order, by papers on: "Materia Medica and Pharmacy in Hospital Practice," by M. I. Wilbert, of Philadelphia, and—

"A Plea for a More Thorough Course in Practical Pharmacy and Prescription Dispensing in Our Medical Schools," by Dr. M. Clayton Thrush, of Philadelphia.

The officers elected for the coming year, by this section, are:—

Chairman, M. H. Fussell, Philadelphia, Pa.
Vice-Chairman, W. W. Thompkins, Charleston, W. Va.
Secretary, C. S. N. Hallberg, Chicago, Ill.
Delegate, S. Solis Cohen, Philadelphia, Pa.

The exhibition held in connection with the annual session of the Association was particularly interesting and included a number of novel features not the least important of which, from an educational point of view, was an exhibit of official and proprietary preparations by the Philadelphia Branch of the American Pharmaceutical Association.

The *Journal of the American Medical Association* (June 15, 1907, page 2033), in an editorial comment on this exhibition, says:—

> "In this connection one must call attention to the most interesting display of the Philadelphia Branch of the American Pharmaceutical Association. These pharmacists showed an array of elegant pharmaceuticals, put up in accordance with the U. S. Pharmacopœia and National Formulary. They were certainly attractive. Those in charge emphasized the fact that any competent pharmacist can prepare elegant and accurate products, and urged that physicians co-operate by prescribing such articles.
>
> "Another part of the exhibit made by the Philadelphia pharmacists consisted of various nostrums, some offered to the public, some offered to the profession, and some offered to both, with comparisons made between their claims and the real facts as regards composition and therapeutic power. This exhibit was the centre of an interested group all of the time."

The pharmacists in attendance on the exhibition were in turn elated with the attention that was given them and, altogether, it is fair to assume that the exhibition will contribute materially to the establishment of better relations between physicians and pharmacists.

In conclusion it is fair that some mention should be made of the criticisms heard on various occasions of the shortcomings of retail druggists and the general inefficiency of persons who are at present posing as pharmacists.

Apart from the strictures embodied in the opening address by President Bryant, and repeatedly voiced by others in the discussion of various papers, the general trend of the more evident complaint is perhaps best illustrated by the following extract from the annual report of the committee on organization, read by the chairman, Dr. J. N. McCormack, of Bowling Green, Ky.

In speaking of the covert as well as direct opposition to the work of the Association that is being fostered by the manufacturers of secret or proprietary medicines, Dr. McCormack said :—

> "While these misrepresentations have done so little harm with the membership, I am convinced that they have kept many from joining the societies, and have crippled our usefulness in many other ways. As one evidence of this, they have arrayed the retail druggists against us almost solidly in most States. At every capital visited I have found a strong force of drug men working under the direction of expert lobbyists representing the National Association of Retail Druggists, backed by the proprietary interests, against the legislation proposed by the profession in the interest of pure food and drugs, with all of their expense borne by that body.
>
> "In every instance an attempt was being systematically and often successfully made to confuse the minds of legislators by the introduction of decoy bills prepared by their central bureau, but cunningly altered as to wording in the various States to hide their common origin. It was found in every instance that legislators were literally inundated by letters and telegrams from their drug and newspaper constituents in the interest of these now fully exposed and recognized frauds. As a real friend of the pharmacists, one who has always been wedded to the prescription method of dispensing, the discovery of this almost universal ascendancy of the quack interests over this trade was a painful one. It evidently means that we have come to the parting of the ways with the druggists, and must arrange to dispense for ourselves, as is being done in other countries, unless prompt steps are taken in a comprehensive way to restore proper relations between them."

These comments, coming as they do from the chairman of the committee on organization, are deserving of careful consideration on the part of pharmaceutical associations and pharmacists in general.

If pharmacy is to make progress along professional lines it must be in harmony with the best interests of the medical profession, and the sooner the representatives of the two professions arrive at a mutual understanding as to the best policy to pursue to safeguard the interests of the public the better it will be for all concerned.

The next annual session of the American Medical Association is to be held in Chicago, in June, 1908, and it would appear that a meeting of the American Pharmaceutical Association, at the same place, either the week preceding or the week following, would be of advantage to members of the latter association who might arrange to be present and to take part in at least some of the proceedings of the American Medical Association.

M. I. WILBERT.

REPORT OF THE PENNSYLVANIA STATE PHARMACEUTICAL ASSOCIATION MEETING.

By CHARLES H. LAWALL.

The thirtieth annual meeting of the Pennsylvania Pharmaceutical Association convened in the meeting-room of the Bedford Springs Hotel, Bedford Springs, at 2·30 P.M. on Tuesday, June 18, 1907, President Gorgas presiding, and the other officers being in their respective places. This session was held for the purpose of expediting the work of the Association, as in several years past, by receiving reports of committees and delegates, thus enabling the future sessions to be devoted to more weighty matters.

Dr. J. A. Miller read his annual report as secretary of the Association, in which he spoke of the number of copies of the Proceedings remaining in his hands as in the previous year. Mr. Joseph L. Lemberger read the treasurer's annual report, which showed a healthy financial condition of the Association. Congratulatory telegrams were received from several other State associations which were meeting during the same week, and which were replied to by the secretary by order of the Association.

The second session was held at 8.30 P.M. on Tuesday. An address of welcome was delivered by Mr. J. W. Jordan, Burgess of Bedford, who in a few well-chosen remarks gave a short account of the advantages of the location as a meeting place for associations. He extended the hospitality of the town to the visiting members and their guests, and called attention to the fact that this is the third time that the Pennsylvania Pharmaceutical Association has seen fit to meet at Bedford Springs. A reply was made to the address of welcome by Mr. B. E. Pritchard on behalf of the general membership, and by Mrs. W. E. Lee on behalf of the ladies. Additional remarks of welcome were made by Mr. Rhoads, who gave a short historical account of Bedford and called attention to its reputation as a meeting place for political conventions away back in the days before the Civil War.

Vice-President Lee then occupied the chair while President Gorgas read his annual address. In this address he called attention to the value of combining both business and professional qualifications, and advised affiliation with the American Pharmaceutical Association and the National Association of Retail Druggists, both of which organizations he commended for their value to the retail druggist. He spoke highly of the work of the Entertainment Committee in previous years, and so far as the plans had been outlined for the present year, the members were assured that they would not be disappointed.

The subject of legislation was then taken up, the prerequisite law discussed, and particular attention was called to the fact that while it had been impossible for the Association to promote the new legislation which was under consideration, good work had been done by the Legislative Committee in stifling objectionable legislation, particularly with reference to the killing of a bill which provided for the use of triangular bottles for all poisonous liquids.

He also proposed a plan whereby a life-membership roll might be established at an advance fee, the money thereby received being set aside as a permanent fund.

The growing need for affiliation between the physician and the pharmacist was also touched upon in brief, and the importance of the U. S. Pharmacopœia and the National Formulary to the retail druggist since the recognition of both of these works as standards by the National Food and Drugs Act has made them more important than ever before in the history of pharmacy.

With reference to the membership he spoke of the slight loss which had been observed in the last few years and said that this was only to be expected on account of the tremendous increase which the Association had in one or two years, many of the members joining on impulse without any deliberate intention of keeping up their membership by paying the annual dues.

He referred to the fact that a large number of Proceedings remained in the secretary's hands, owing to this decrease in membership, and recommended that only a sufficient number of Proceedings be published to supply those who have paid their annual dues, and not, as at the present time, sending copies to all those who are less than three years in arrears.

His final recommendation was that the Executive Committee be authorized to have the portraits of such former presidents, whose pictures have not previously appeared in the Proceedings, published in the annual Proceedings of subsequent years. The President's address was very well received by the members and was referred to a committee consisting of Messrs. Cliffe, Pritchard and Walton.

Mr. McIntyre then spoke on the subject of the Procter Memorial, and mentioned that $65 had been received from members of the Pennsylvania Pharmaceutical Association, but that he was still prepared to receive contributions from members who desired to give something to commemorate Professor Procter.

The meeting then adjourned to meet on Wednesday at 9.30 A.M.

The next session was held on Wednesday morning at 10 o'clock, President Gorgas occupying the chair. Reports were received from Messrs. Byers, Marcy and Lowe. Dr. Lowe being chairman of the Committee on Location, reported in favor of Paxinosa Inn, Easton, Pa., for the meeting of 1908, the time to be June 23, 24 and 25. This report was received and unanimously approved, the matter of the appointment of a local secretary being left to the Executive Committee.

Mr. Charles E. Vanderkleed presented the report of the Committee on Adulterations, which report was too long to read in its entirety, but which showed that the Committee was entitled to very great credit for the thorough and comprehensive manner in which they had taken up the subject. Parts of it which contained matters of specific interest were read, and some discussion followed the reading of the report.

Mr. John C. Wallace, chairman of the Committee on Legislation, then presented the report of that important body. He spoke of the difficulty which the Committee had encountered in attempting to have a new law passed. By concerted action with several pharmaceutical bodies in the State, a law had been approved which was presented as Senate Bill No. 101, which passed that legislative body successfully, but which died in the House after having been referred to the Committee on Public Health and Sanitation. He also spoke of the fact that the recommendations made the previous year to guide the Committee in its work were impossible to carry out. Particular attention was called to the fact that while no new legislation had been accomplished, the Committee felt that it had been of value to the Association in preventing the passage of several objectionable bills, among which was House Bill No. 520, which provided that all poisonous liquids must be dispensed in triangular shaped bottles. At the close of this report some discussion took place in which several of the members signified a desire to have a complete report of the doings of the Committee, explaining the methods whereby these results had been obtained. After some deliberation, however, it was decided that such a course would be unwise and would hamper the future work of the Committee. On motion of Dr. Lowe a vote of thanks was tendered to the Committee, which was also commended for its indefatigable efforts in the work assigned to it.

The Committee on Nominations next reported, and the following members were placed in nomination and unanimously elected by the secretary casting an affirmative ballot: President, Dr. C. B. Lowe, of Philadelphia; First Vice-President, John C. Wallace, of Newcastle; Second Vice-President, Croll Keller, of Harrisburg, Pa.; Secretary, Dr. J. A. Miller, of Harrisburg; Treasurer, Joseph L. Lemberger, of Lebanon; Executive Committee, L. L. Walton, of Williamsport; S. A. Stright, of Braddock; Charles Hay, of Dubois.

The following persons were elected honorary members of the Association: Mr. Leo Eliel, of South Bend, Indiana; Mr. S. A. D. Sheppard, of Boston; Dr. H. M. Whelpley, of St. Louis, Mo.

The balance of this session was devoted to the reading of papers and queries, Professor LaWall having presented his report for that committee and being invited to take charge of the meeting. The following papers were read and discussed:—

"A Hand-me-down Conscience," by B. E. Pritchard; "A Test for Gurjun Balsam in Copaiba," by C. E. Vanderkleed; "Solution of Acid Phosphates," by C. E. Vanderkleed; "Incompatibility of Resorcin and Liquid Petrolatum," by L. L. Walton; "Modifying Milk Mixtures," by R. H. Lackey; "Glyceritum Tonicum Compositum," by F. M. Apple.

The Wednesday afternoon session convened at 3 o'clock. The Auditing Committee, consisting of Messrs. Campbell, Eggers and Cope, reported that the Treasurer's accounts were correct and that the financial standing of the Association was satisfactory. Congratulatory telegrams were received from several State Associations and individuals, and the secretary was directed to reply to them. The privilege of the floor was accorded to Mr. Barlow, representing the N. A. R. D., who made a short address on the advantages of united effort. The report of the Committee on Chemistry was presented by the chairman, F. M. Apple, who recommended that as there did not seem to be any necessity for a separate committee on chemistry, this committee be incorporated in the future with the Committee on Adulterations. Upon motion, this recommendation was referred to the Committee on President's Address.

Mr. Frailey reported for the Committee on Membership, and a number of names were presented to the Executive Committee for approval. The balance of the session was then devoted to the discussion of papers and queries, Professor LaWall presiding. The following papers were presented and discussed by the members present:—

"Popularizing the U. S. P.," by E. E. Heffner; "Popularizing N. F. Preparations," by O. W. Osterlund; "Popularizing the U. S. P.," by W. O. Frailey; "The P. D. Degree," by J. O. Gleghorn; "Dispensing Physicians and Prescribing Pharmacists," by Thomas H. Potts; "Cataplasm of Kaolin," by I. V. S. Stanislaus; "Liquid Soap," by I. V. S. Stanislaus; "Note on Glycerin Suppositories," by H. C. Blair.

The Thursday morning session convened at 11 o'clock. A resolution was presented, bearing upon the injustice done by the Federal interpretation of the Sherman Act in its application to the N. A. R. D. This was carried unanimously. Mr. Walter Rothwell was accorded the privilege of the floor for the purpose of speaking about the American Druggists' Fire Insurance Company, and the subject was discussed by Mr. Frailey, Dr. Lowe, Mr. Pritchard and others.

The final session of the Committee on Papers and Queries was then held, and the following papers were read in full:—

"Lead and Chemical Trees," by F. P. Stroup; "Powder Folder," by J. Percy Remington; "What Should an Applicant for Q. A.

Know?" by L. L. Walton; "Popularizing N. F. Preparations," by R. H. Lackey; "Query 31," by W. O. Frailey; "Query 21," by J. Leyden White. J. W. England's paper on "How to Write a Paper" was read in abstract, as it was too long to be read in full.

The following papers were read by title, the time alloted for the Section on Papers and Queries being insufficient to allow of all the papers being read in full:

"Standardization of Diphtheria Antitoxin," by W. A. Pearson; "Laboratory Notes," by Willard Graham; "Diastase and Antiseptics," by Henry Leffmann; "Solution of Potassium Arsenite," by E. Fullerton Cook; "Query 10," by L. E. Hastings; "Query 10," by F. E. Niece; "Elevation of Pharmacy," by W. G. Greenawalt; "Query 39," by W. G. Greenawalt; "Query 39," by Jacob Eppstein; "Proprietaries from a Pharmacist's Standpoint," by Christopher Koch; "Manufacture of Perfumery by the Pharmacist," by I. V. S. Stanislaus.

Upon motion of Dr. Lowe, all of the papers presented by the Committee were referred to the Executive Committee for publication in the Proceedings, and a unanimous vote of thanks was tendered to the Committee for the large number of papers which it had procured for the meeting.

The Committee on President's Address reported in favor of the establishment of a life membership fund, the details to be left to the Executive Committee and to be made effective in 1908.

The recommendation of the Committee on Chemistry to merge with the Committee on Adulterations, was adopted.

The final session of the Association was held on Thursday evening at 8.30 o'clock. The prize of a Pharmacopœia for the best paper on "How to Increase the Interest of the Physician in the U. S. P." was awarded to Richard H. Lackey, of Philadelphia, the committee having charge of the matter being composed of the ex-presidents of the Association who were present at the Thirtieth Annual Meeting, Mr. McIntyre being chairman by virtue of seniority. The newly elected officers were then conducted to the platform and duly installed in their respective positions, following which the Entertainment Committee took charge of the meeting for the balance of the evening and awarded the prizes for the various sports and contests which had been held during the week.

The meeting as a whole, while not as largely attended as some of those which have been held in locations which are more accessible, was both interesting and profitable to all who were present. The fair weather which prevailed contrasted strongly with the rainy period which had marked the week in 1905, when the Association met at Bedford Springs before, and the Entertainment Committee outdid themselves in their efforts to provide novel and pleasing features for the enjoyment of the members and their ladies.

ABSTRACTS OF PAPERS.

Notes on Glycerin Suppositories.

H. C. Blair.

The author states that where there is comparatively small demand for glycerin suppositories they can be made extemporaneously by the U. S. P. formula in a satisfactory manner, but that for large stock quantities the best results are obtained by adding to heated glycerin 3 per cent. of soap previously made from stearin and sodium carbonate. This soap should be as nearly neutral as possible, and dried and powdered. The advantages over the official preparation are a lower melting point, greater solubility, firmer consistence, and as there is less water in them they are much more hygroscopic. If kept in well stoppered vials and in a moderately cool temperature, they will remain in a perfect condition almost permanently.

Is it Profitable for the Pharmacist to Prepare Modified Milk Mixtures for Percentage Feeding of Infants?

R. H. Lackey.

A negative reply is furnished by the author, who forms his opinion upon some practical experience in making modified milk mixtures at home. It is stated that the success of the use of such mixtures is dependent upon four factors: (1) The direction of a physician who thoroughly understands the method. (2) The selection of a milk free from infection, preferably a certified milk. (3) The intelligent carrying out of the physician's instructions in the daily preparation of the food. (4) The proper equipment for the Pasteurization of the mixture and the refrigeration of the product.

To properly carry on this work would require a special laboratory, an extensive sterilizing outfit and a large refrigerating capacity, and the loss from unused stock would be considerable.

A New Incompatibility with Resorcin and Liquid Petrolatum.

L. L. Walton.

The following prescription was presented as having occasioned difficulty in compounding which was found to be insurmountable:

Menthol	3 grains.
Eucalyptol	3 minims.
Resorcinol	2 grains.
Petrolatum, liquid	½ fluidounce.

Ft. Sol.

Used as a nasal spray.

The insolubility of resorcinol in liquid petrolatum was at once recognized, but its property of liquefying when rubbed with menthol, it was thought might possibly overcome the difficulty. A turbid looking mixture resulted, which afterwards separated a yellow colored resinous precipitate which gave the characteristic color reaction for resorcinol when separated and tested. Additional experiments were tried, using ether, acetone, absolute alcohol and acetic ether, without obtaining any satisfactory results, so that the author was unable to dispense the prescription at all as a permanent solution. He therefore presented the paper in the hope that somebody would make a suggestion which would assist him in overcoming the difficulty.

Glyceritum Tonicum Compositum.

F. M. Apple.

A formula is suggested for a pharmaceutical product resembling the well-known proprietary preparation much prescribed by physicians in certain parts of the country. The process and formula were derived from the same source as that of the proprietary product, according to the author, and is as follows:

Gentian, ground	3 ounces 6 drams.
Sherry wine q. s. to make	26 fluidounces.

This preparation is called "gentian percolate" in the following formula for the finished preparation:

Gentian percolate	1 fluidounce 5 fluidrachms.
Sherry wine	3 fluidounces 2 fluidrachms.
Fluidextract of dandelion	1 fluidounce 6 fluidrachms.
Glycerin	6½ fluidounces.
Phosphoric acid	2 fluidounces.
Concentrated tr. of cardamom	1½ fluidounces.
Syrup of lemon	3 fluidounces 2 fluidrachms.
Sugar	3 Troy ounces.
Precipitated calcium phosphate	q. s.

Mix and filter.

This formula is claimed to be very much superior to the one published in the third edition of the National Formulary intended for the same purpose, on account of the fact that it is free from saccharin, which is present in the N.F. preparation, and which is very objectionable. The title was selected as being characteristic and descriptive, and attention is called to the fact that it could be readily prepared extemporaneously after the gentian percolate had been obtained.

A COMBINATION POWDER DIVIDER AND FILLER.

J. P. Remington, Jr., B.S., P.D.

The device which was exhibited and also practically demonstrated, consists of a brass trough and cutting frame furnished with twelve spouts and a sectional partition for less than twelve powders. It is operated by distributing and leveling the powder in the trough, placing the cutting frame thereon, having previously placed in position the powder papers, which may either be machine-made or previously folded by hand, then inverting and tapping with a spatula, which permits the divided powders to be thrown directly through the spouts into the papers, which are then removed and placed in the box. The advantages claimed for the machine are accuracy, simplicity of operation and construction and universal application to all kinds of powdered materials, whether hygroscopic or sabulous.

TWO FORMULAS FOR LIQUID SOAP.

I. V. S. Stanislaus, Ph.G., B.S.

The following formulas are suggested as giving satisfactory and economical preparations :—

No. 1. Take of

Linseed oil	300 grammes,

place in a strong and capacious bottle and add a solution of

Potassium hydroxid (U.S.P.)	61 grammes

in a mixture of

Alcohol	100 grammes,
Water, distilled	150 grammes.

Agitate the mixture vigorously during twenty-four hours, or until completely saponified. Mix this product with

Alcohol	200 grammes,
Water, distilled	200 grammes,

and perfume with

Ol. bergamot,	
Ol. orange,	
Ol. cassia,	
Ol. spearmint, of each	2 grammes.

The above liquid soap made by cold saponification costs less than twenty cents per pint and gives satisfaction.

No. 2. Take of

Pot. carbonate	120 grammes,

dissolve in

Diluted alcohol	12 fluidounces

and add

Soft soap, U.S.P.	6 ounces avoirdupois.

Digest this in a warm place over night, then add

Diluted alcohol to make	32 fluidounces.

After standing twenty-four hours filter and add

Soluble blue	2 grains,
Ol. cassia,	
Ol. lavender, of each	30 mimins.

This produces a light greenish-colored liquid soap which costs about twenty-two cents per pint.

(*To be continued.*)

CENTENNIAL CELEBRATION OF THE UNIVERSITY OF MARYLAND.

The ceremonies commemorating the one-hundredth anniversary of the University of Maryland began on Thursday morning, May 30th, and extended to Sunday, June 2d. The event was one of historic interest not only to the city of Baltimore, but also to the professions of medicine, pharmacy, dentistry and law, as the corresponding departments of the University have, since their incorporation, always had professors of the highest standing.

The University of Maryland was really founded by an act of Legislature on December 29, 1812. This act authorized the Medical College of Maryland, which was established in 1807, to constitute, appoint and annex to itself three colleges or faculties, viz.: the Faculty of Divinity, the Faculty of Law, and the Faculty of Arts and Sciences. After the passage of the act incorporating the

University, the Medical College of Maryland became the Medical Department of the University, with a faculty known as the Faculty of Physic. The centennial celebration commemorated the organization and continuous work of the Faculty of Physic, first as the Medical College of Maryland, and second as the Department of Medicine of the University of Maryland.

At the session of the General Assembly of Maryland in 1882, the charter of the University was so amended as to provide for the creation of a Dental Department, and, in 1904, the Maryland College of Pharmacy, which was founded in 1840, became affiliated with the University. While the growth of the several departments of the University furnishes a record that she may well be proud of, for they were developed on the principle that it is better to raise one school to a high degree of efficiency rather than to attempt experiments which are hazardous, it will be more pertinent to this JOURNAL to refer to the history of the Department of Pharmacy. This is succinctly given by Prof. D. M. R. Culbreth in the *Hospital Bulletin*, for May 15, 1907, and is as follows :—

In order to elevate pharmacy in their midst, on June 8, 1840, three prominent physicians, representing the Maryland Medical and Chirurgical Faculty—Wm. E. A. Aikin, William Riley and Samuel Baker—met at the house of the latter eight representative pharmacists—Thomas G. Mackenzie, George W. Andrews, David Stewart, Robert H. Coleman, Henry B. Atkinson, John Hill, Jonathan Chapman and J. W. W. Gordon. The meeting was presided over by Dr. Baker, and was not only interesting, but important, from the fact that it appointed a committee of five apothecaries, who should report subsequently the best plans for a college of pharmacy in the city of Baltimore. A month later, July 6th, a general meeting of the regularly educated apothecaries in Maryland was called (in order that all might have an opportunity to express their views upon the proposition), at which a committee was appointed to draft a constitution and by-laws and to report back at a similar meeting two weeks later, July 20th, the day from which dates the existence of the Maryland College of Pharmacy. At the following session of the legislature it was made a legalized institution by incorporation, the memorial being presented to that honorable body by Benjamin Rush Roberts and Robert H. Coleman, passed upon January 27, 1841, and signed a short time thereafter by the then Governor, Hon. William Grason.

The incorporators, seventeen in number, immediately organized and established a course of instruction in chemistry, materia medica and pharmacy, it being decided that lectures for a while, at least, should be delivered by the various willing members of the college in regular rotation. Seven, having thus consented, entered upon their duties the first week in November, 1841, and continued to the close of the session of 1843–1844, when it was considered advisable to have distinctive professors for each department. As a result the chair of "Theory and Practice of Pharmacy" was constituted April 24, 1844, Dr. David Stewart elected thereto, and an arrangement effected with the faculty of physic of the University of Maryland whereby the lectures of the college were to be united with those of the university, thus giving the medical and pharmaceutical students reciprocal advantages. Thereafter the university lecture and faculty rooms, northeast corner Lombard and Greene Streets, were used conjointly by the representatives of both institutions, lectures on pharmacy, including materia medica, being delivered by Prof. David Stewart, while the pharmaceutic students attended the chemical lectures of Prof. Wm. E. A. Aikin, then also dean of the faculty of physic. This arrangement with the University continued in force until 1847, when Professor Stewart resigned, owing to the number of students continuing small, the compensation insignificant and the general interest in the college less evident. Of the seventeen originators, seven had sought other occupations and four had passed away by death, while those entering the profession manifested little zeal towards its educational improvement, in consequence of which, after March 23, 1848, the lectures and meetings were discontinued altogether for a period of nine years, the charter remaining in force, when through a revivifying spirit a new era dawned.

Reorganization.—On February 7, 1856, ten apothecaries of the city met together in the hope of reaching an agreement upon certain principles by which pharmacists should be governed in their relations to one another. At this meeting the presiding officer, Israel J. Grahame, boldly affirmed that, in his opinion, this could be accomplished most effectively by reorganizing the Maryland College of Pharmacy, and by a united determination on the part of the apothecaries to give it their hearty support. He further stated that the by-laws of that quiescent institution contained a provision which entitled all pharmacists in good standing to honorable membership. These suggestions were accepted seriously, and a committee was appointed to wait upon the holding-over president of the college, George W. Andrews, with the request that he call a meeting of the old organization, and of pharmacists generally, to consider the matter definitely. This meeting was held February 20, 1856, at the northeast corner of Lexington and Eutaw Streets, and was attended by thirty-one druggists, but, owing to the want of a quorum of college members, the election of new applicants for membership had to be deferred five days, February 25th, when they were accepted, as was the resignation of the former officers, the successors of the latter being promptly chosen. At a subsequent meeting the original constitution and by-laws were revised, a code of ethics adopted and a "committee upon instruction" appointed, consisting of Israel J. Grahame, Wm. S. Thompson and J. Faris Moore, who in due time recommended the creation of three professorships—chemistry, materia medica and practical pharmacy—with distinctive professors, each to deliver at least twelve lectures during the session. A canvass of the city indicated that about twenty students would attend that fall, 1856, consequently rooms were rented and properly fitted up for renewing the work she has ever since striven to ennoble and dignify.

Habitations.—Like many institutions of humble beginning, she has experienced a certain itineracy more healthy than otherwise, that which in each instance has followed the path of acknowledged improvement and promotion. At first (1841–1876) it rented halls, Lombard and Greene Streets (1844–1848), Calvert and Water Streets (1856–1858), 47 North Calvert Street (1858–1868), 12 West Baltimore Street (1868–1876); then (1876–1886) in her own granite building, 113–115 Aisquith Street, originally a city grammar school, purchased and rearranged for her specific needs; then, outgrowing these quarters (1886–1904), in a much more imposing brick three-story building, erected for her purposes on the old site, including the side and rear yards, 109–115 Aisquith Street; then finally (1904), by a wise affiliation with the University of Maryland, to enjoy her more liberal advantages, wherein the larger life and possibilities are afforded for developing broader-minded men, a better type of manhood. These are milestones simply of her material progress, while those of the educational line may be said to stand out with even greater boldness.

At the opening exercises of the centennial celebration on Thursday morning, Prof. John C. Hemmeter, of the medical department, presided. Greetings were received from institutions and individuals the world over. The Philadelphia College of Pharmacy was among the institutions represented, its felicitations being presented by Prof. Henry Kraemer. The address, which was handsomely engrossed, was as follows:—

ADDRESS TO THE UNIVERSITY OF MARYLAND FROM THE PHILADELPHIA COLLEGE OF PHARMACY.

The *Philadelphia College of Pharmacy* extends to the *University of Maryland* most cordial greetings on the occasion of your *Centenary Celebration*, and we desire to express our best wishes for your future welfare and advancement.

We are indebted to your city for our noble Procter, who for so long helped to guide the destiny of the *Philadelphia College of Pharmacy*, and who through his magnanimity maintained such cordial relations with those at the helm in the *Maryland College of Pharmacy*, now an integral part of your honored University.

It therefore affords us more than usual pleasure to join with you in celebrating your CENTENARY, bound as we are by strong ties of friendship and mutual interest.

Signed and sealed on behalf of the Philadelphia College of Pharmacy on this thirtieth day of May, Anno Domini nineteen hundred and seven.

HOWARD B. FRENCH, *President.*
C. A. WEIDEMANN, M.D., *Secretary.*

[SEAL]

In accepting the address Dr. Hemmeter thanked the college for its expression on this centenary occasion and stated that the address would be framed and hung on the walls of the University.

In the absence of the Provost of the University, owing to illness, Mr. J. Harry Tregoe, president of the General Alumni Association, made a brief address welcoming the visiting alumni to the city. The leading address was made by Dr. Samuel C. Chew, for forty-three years a member of the faculty, whose father was also on the faculty sixty-six years ago.

On Thursday evening the "Centennial Class" gave a dinner at the New Howard House, which was a very enjoyable occasion. Prof. Charles Caspari, Jr., acted as toastmaster and speeches were made by a number of the members of the graduating class, the faculty and several of the invited guests.

The events of Thursday were but a prelude to the celebration on Friday, beginning with the academic ceremonies in the morning and ending with the academic banquet at night. The ceremonies of the commencement were both elaborate and impressive, being commemorative of the history of the University. In caps and gowns and hoods of many hues, about a thousand men, including the distinguished representatives of the leading educational institutions in the country, the leading alumni of the University of Maryland and the 237 graduates were present.

The only college of pharmacy which sent representatives was the Philadelphia College of Pharmacy, Prof. Joseph P. Remington, Dean of the Faculty, and Prof. Henry Kraemer, being the official delegates.

President Fell, of St. John's College, called the gathering to order and asked Rev. P. C. Gavan to deliver the prayer. He was followed by Cardinal Gibbons, who led the audience in repeating the Lord's Prayer.

Governor Warfield was then introduced as the chairman of the proceedings. After expressing his regret that Mr. Bernard Carter, provost of the university, was too ill to be present, the Governor explained that he was chancellor of the university by virtue of his position as Governor of the State.

After an intermission, during which there were musical selections by Itzel's orchestra, President Francis L. Patton, of Princeton Theological Seminary, was introduced and spoke in part as follows:

"I congratulate this university on its one hundred years. Distinguished men have taught in your chairs, but I shall not mention names. The name of George Washington is found on the list of matriculates of a university so nearly affiliated with this." After speaking of the distinguished place the University of Maryland holds among the educational institutions of the country, Dr. Patton declared it was a worthy object upon which money should be showered. Addressing the new graduates, Dr. Patton said they should be proud they were entering into a professional life. "The business man goes into business," he argued, "to work it for all it is worth, but the man who enters a profession goes into service not with regard for the pecuniary return."

The address of Dr. G. Stanley Hall, president of Clark University and formerly professor of the Johns Hopkins University, was a serious discussion of many of the most vital problems of to-day.

After the address by Dr. Patton the degrees in course were conferred by Governor Warfield, the candidates in the different departments of the University were presented by the deans of the several faculties.

In presenting the candidates for the degree "Doctor of Pharmacy" in course, Professor Caspari said:—

"*Mr. Chancellor:* In accordance with the mandate of the Regents of the University of Maryland directed to the Faculty of Pharmacy, which I hold in my hand, commanding it to hold a public commencement on this day, and then and there to admit to the degree of Doctor of Pharmacy certain students of the Department of Pharmacy who have been adjudged to merit the said degree, I have the honor to present to you the following candidates for the degree of Doctor of Pharmacy, all of whom are named in said mandate, and to ask that they may receive the same."

The following candidates were then called up in alphabetical order and presented to the Chancellor, who conferred the degree: Thomas William Alexander, Bernard Francis Behrman, Cristobal Julian Caraballo, Frederick Garrison Carpenter, H. A. Brown Dunning, Ph.G., John Cyril Eby, Richard Independence Esslinger, Amin Fanous, Maysville Jane Freeman, Herman Nicholas Frentz, Samuel William Ford, Joseph Wester Jones, Louis Kirchner, William Herman Kratz, Charles Osborne Laney, Charles Howard Lapouraille, Furman Butler McCrackin, John Raymond Miller, James Harry Moran, Harry John Frederick Munzert, Frederick George Seidel, Norman Everett Shakespeare, Clarence Brooks Sullivan, Bayard Van Sant, Russell Brown Way and Henry Lyman Whittle, Ph.G., M.D.

After the address by Dr. Hall, the honorary degrees were conferred by Governor Warfield.

Dr. Thomas Fell, President of St. John's College, which is the Department of Arts and Sciences of the University, addressing the audience, said: "It has been an ancient custom for universities on festal days to honor men of learning by the bestowal of personal tokens of admiration in recognition of their achievements in the field of literature, art, science or theology. In conforming with this usage the regents of the University of Maryland, desiring to place upon the honor roll of this University the names of certain distinguished men, have caused a mandate to be issued, directing that on this occasion degrees *honoris causa* be conferred upon those whose names will now be presented to the Chancellor one by one."

The representatives of the different departments presented to the Chancellor of the University the several candidates for honorary degrees. In presenting the candidates for the honorary degrees in Pharmacy, Professor Caspari said:—

> *Mr. Chancellor:* I have the honor to present three of those men who have been deemed worthy of special honor by the regents, and who have been named in their mandate, and I respectfully ask that they be admitted to the degree of Doctor of Pharmacy, *honoris causa*.
>
> Charles Emile Dohme: graduate of the Maryland College of Pharmacy, class of 1862, who has devoted the greater part of his life to laboratory work pertaining to manufacturing pharmacy, resulting in numerous and valuable improvements in chemical preparations.
>
> John Francis Hancock: graduate of the Maryland College of Pharmacy, class of 1860; for the past forty odd years a staunch advocate of ethical pharmacy, contributing to its literature and scientific research.
>
> Henry Parr Hynson: graduate of the Maryland College of Pharmacy, class of 1877, who for thirty years has been an enthusiastic advocate of ethical pharmacy, and since 1900 an earnest and successful instructor in the department of pharmacy in this university.

Honorary degrees were also conferred upon the following candidates:—

Doctor of Laws.—William T. Councilman, Boston; Simon Flexner, Rockefeller Institute, New York City; G. Stanley Hall, Clark University; Francis L. Patton, Princeton; Judge James McSherry, Maryland Court of Appeals; Major James Carroll, United States Marine Hospital Service; Surgeon-General Walter Wyman, United States Marine Hospital Service; S. J. Meltzer, New York; William T. Porter, Baltimore; Wm. J. Mayo, Rochester, Minn.; William T. Howard, Baltimore; Samuel C. Chew, Baltimore.

Doctor of Science.—Alexander C. Abbott, Philadelphia; Henry J. Berkely, Baltimore; Charles P. Noble, Philadelphia; J. Homer Wright, Boston; J. Whitridge Williams, Baltimore; J. Ford Thompson, Washington, D. C.; Isaac Stone, Washington, D. C.; H. D. Fry, Washington, D. C.; N. G. Keirle, Baltimore.

Doctor of Sacred Theology.—Bishop Luther B. Wilson, M.D., Chattanooga, Tenn.

Doctor of Medicine.—T. C. Gilchrist, Baltimore.

Master of Arts.—Eugene F. Cordell, Baltimore; Richard L. Simpson, Richmond, Va.; B. Merrill Hopkinson, Baltimore.

The academic banquet on Friday evening was a great success. Dr. John P. Poe acted as toastmaster, and the following toasts were responded to:—

"The President of the United States," Attorney-General Bonaparte; "The State of Maryland," Governor Warfield; "The City of Baltimore," Mayor Mahool; "The University of Maryland," Judge Henry D. Harlan; "Our Alumni," City Solicitor William Cabell Bruce; "Our Centennial," Prof. John C. Hemmeter; "Woman," Mr. Folger McKinsey.

On Saturday, in spite of the rain, a large number visited St. John's College at Annapolis to attend the ceremonies commemorative of its formal amalgamation with the University. Mr. J. Wirt Randall, in an address of welcome, spoke of the history of the college.

At the conclusion of Mr. Randall's address, Dr. Hemmeter presented a tablet to St. John's College in behalf of the University of Maryland, after which Dr. Fell, president of the Department of Arts and Sciences, made a brief response.

The centennial celebration closed on Sunday morning with exercises at Mount Vernon Place Methodist Episcopal Church, at which Bishop Luther B. Wilson delivered the baccalaureate sermon.

In reflecting on the events of this four days' celebration one cannot but be pleased that pharmaceutical education in Maryland is in the hands of the State University. The historic associations of St. John's, the eminence of some of the members of the faculties, and the culture for which the University stands—all of these influences must, if they benefit one profession, benefit all departments connected with the University. Neither a graduate nor an apothecary could leave the celebration without a due sense of his responsibility in the development of the science and art of pharmacy and an aspiration enkindled to do his part in this important work. The university spirit introduced into pharmacy means the elevation of professionalism on the part of the pharmacist and the development of the scientific spirit on the part of teachers and students alike.

THE AMERICAN
JOURNAL OF PHARMACY

AUGUST, 1907.

SYNTHETIC CAMPHOR.

By L. F. Kebler,
Chief of Drug Laboratory.

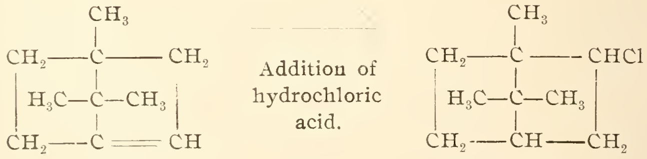
Requests are coming to the Bureau of Chemistry for information on synthetic camphor, and inasmuch as it is difficult to answer in detail the various questions, it is thought desirable to publish a brief resume on the subject.

The camphor tree, *Cinnamonum camphora* (L) grows in various sections of the world, either indigenous (Eastern Asia and Japan) or introduced (California and the Gulf States of the United States); but so far the trees have not been utilized to advantage for the production of camphor, excepting on the island of Formosa, where at present nine-tenths of it is produced. All camphor produced on this island is now and has been since the Japan-Chinese war, August 5, 1899, under the supervision and control of the Japanese Government. The unfortunate part of this situation was keenly felt during the late Russian-Japanese War. During the course of this war the amount of camphor placed on the market was materially restricted, probably because the output was diminished. Another reason given is that an undue amount was utilized for the manufacture of ammunition, but this is said to be a mistake. The celluloid industries of this and other countries, depending on camphor as one of the basic constituents in the manufacture of their goods, were remarkably handicapped because of the tremendous advance in the price of camphor during the Russian-Japanese War. About 90 per cent. of all camphor produced is utilized for the manufacture of celluloidal articles. It was also felt to some extent in other directions; for example, camphor is used as an ordinary household remedy for medicinal purposes and as a cosmetic. During the above-mentioned period the price of camphor was doubled.

The amount of camphor used for various purposes is estimated at from six to eight million pounds. According to a bulletin recently issued by the Japanese Department of Finance, these figures appear high. The money value of the camphor imported into this country at present approximates one and a half million dollars, and on account of the monopoly and the fear of a possible further restricted supply, unusual efforts have been made to produce camphor synthetically. The outlook for making camphor both synthetically and from natural sources in the near future in the United States is promising. The writer is in possession of samples derived from both sources. It is reported that synthetic camphor is a commercial article in Germany. A former employe of the United States Department of Agriculture is at present investigating the commercial possibility of producing the natural article in this country.

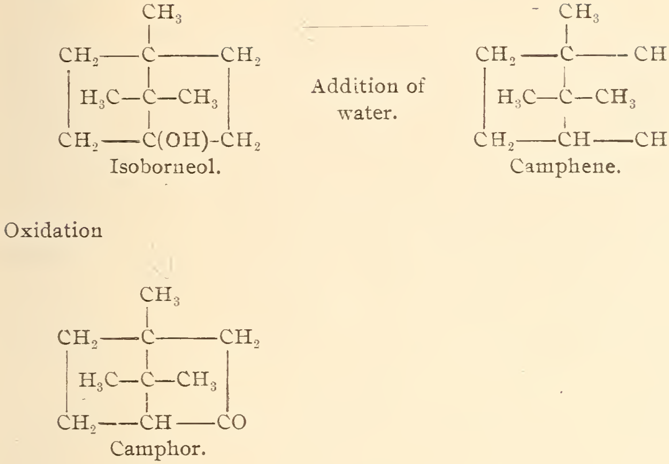
This paper deals largely with U. S. patent literature on the subject of synthetic camphor. The basic substance of most patents for the manufacture of camphor is some variety of turpentine, American or French, or any other product containing a sufficient amount of pinene either dextro or levo-rotatory. All of the operations covered by present patents may be considered under two heads, namely, the conversion of pinene into borneol, isoborneol or camphene, with subsequent oxidation of these products into camphor. These two phases are fully brought out by the following abstracts of the patents themselves.

The accompanying structural formulas represent the successive changes involved in making camphor from turpentine, including the production of camphene as an intermediate step:



Pinene. Bornyl chloride.

Splitting off hydrochloric acid.



The first patent on synthetic camphor known to the author was issued in Germany, April 12, 1892, to J. Bertram, No. 67,255. It consists in converting camphene into isoborneol acetate with a sulphuric-acetic acid mixture. The isoborneol acetate so obtained is saponified, the solid isoborneol separated and oxidized by the usual oxidizing agents.

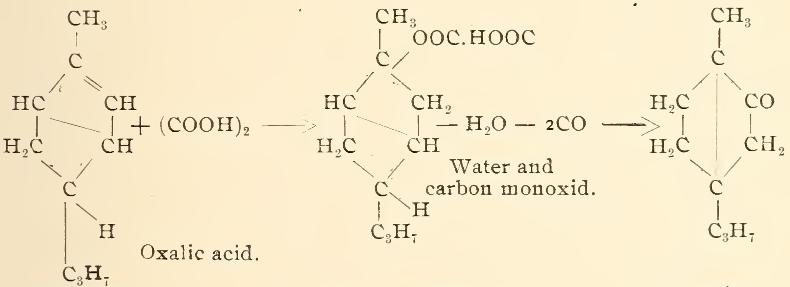
Camphene can be prepared by treating pinene hydrochloride with alcoholic potash, potassium acetate, glacial acetic acid, sodium alcoholate, sodium benzoate, and heating with water under pressure. In 1902 Karl Stephan was granted two U. S. patents, Nos. 707,270 and 707,271 respectively. According to the former patent camphene is prepared by heating any hydrogen haloid of pinene with aliphatic bases such as piperazin, piperidin and diamylamin, and by the latter patent the same pinene compounds are treated under pressure and heat with alcoholic ammonia, aqueous ammonia or ammonia gas.

The first process protected by U. S. letters-patent No. 582,221 for the manufacture of synthetic camphor was issued May 11, 1897. The turpentine is converted into what is termed by the patentee "hydrochlorinated terpene," long known as "artificial camphor," the common name for which is bornyl chloride. It was first produced by Kindt in 1803 and considered by him to be camphor. It is claimed by the patentee that in order to successfully produce bornyl chloride, it is absolutely necessary to work with anhydrous turpentine and hydrochloric acid, the yield being markedly diminished by the presence of moisture. Anhydrous turpentine is produced by treating the article of commerce with finely granulated dry calcium chloride and with subsequent decantation. Hydrochloric acid is prepared by the action of sulphuric acid on dry sea salt, the associated impurities removed by cooling and subsequently passing the gas through calcium chloride. When the turpentine is thoroughly saturated with the hydrochloric acid gas, the bornyl chloride will crystallize out and can be separated from the liquor either by centrifugalizing or by means of a filter pump. The crystals so obtained should be recrystallized from benzin or washed with alcohol.

The patentee found that bornyl chloride can be converted into camphor by the following simple operation: The purified crystals are mixed with lime in the proportion of about three parts of the former with one part of the latter, by weight, and submitted to distillation. This procedure results in the formation of camphene, which, when heated with nitric acid at a moderate heat, is converted into camphor. Other oxidizing agents, such as potassium permanganate, chromic acid or ozone, can also be used.

The apparatus used in the manufacture of camphor by this process is elaborately illustrated and described. The process for purifying the crude camphor is dismissed by saying: "This product will be found usually somewhat dirty and may be cleaned in any suitable manner."

Nearly five years later, April 29, 1902, U. S. patent No. 698,761, on a process of producing camphor, was granted to N. Thurlow. The method consists in treating anhydrous turpentine with anhydrous oxalic acid at a suitable temperature with subsequent oxidation and purification. The oxalic acid supplies the carboxyl group, thus forming an ethereal compound. The method is carried out by mixing five parts by weight of anhydrous turpentine with one part by weight of anhydrous oxalic acid and heating to about 120-130 degrees centigrade. This results in the formation of "penyl oxylate, formate, camphor, and waste polymerization products." The mixture is then treated with lime in excess to break up the ethereal salts of borneol into borneol. The camphor and borneol are separated from the mass by submitting to steam distillation. The distillate contains not only the borneol and camphor, but also some oily matter which can be separated from the borneol and camphor by freezing and centrifugalizing. The mixture of camphor and borneol having now been obtained in a fairly pure condition is submitted to oxidation for the purpose of converting the borneol into camphor. Various oxidizing agents are described as being satisfactory, particularly potassium dichromate with sulphuric acid. The series of reactions supposed to take place are illustrated by the following structural formulas:



Turpentine. Pinyl oxalate. Camphor.

During the heating, part of the oxalic acid is decomposed into formic acid, by means of which the carboxyl group may also be introduced into the turpentine.

The Ampere Electric Chemical Company, of Ampere, N. J., claims to have effected a yield of 38 per cent. camphor based on the turpentine. So far, however, synthetic camphor produced by this process has not had a material influence in the camphor market and the commercial value of the patent is highly questioned, especially in view of the fact that the German patent for the process has recently been cancelled. The writer has in his possession a sample of camphor purported to have been made by this process in 1902. Synthetic camphor is usually reported as being inactive optically, but the above sample is dextro-rotatory, 3·64° at 25 C. It is significant to note that no camphor made by this process appears to be available at present. The method is probably of interest at present only historically.

Another process for making camphor was protected by U. S. letters-patent No. 770,940, September 27, 1904. It is claimed (*Ber. d. Chem. Ges.* 33, 3430) that when isoborneol is oxidized by means of permanganate in glacial acetic acid, almost theoretical results are obtained. The inventor of the present process, however, states that not more than a yield of 10 per cent. can be secured by the operation, but claims that from 95 to 100 per cent. can be secured when isoborneol, either in powdered form or when dissolved in such solvents as benzin or benzol, is oxidized with an aqueous solution of potassium permanganate. The oxidization takes place in an alkaline medium, but not in an acid or neutral one; for example, 10 kilos of isoborneol, either finely powdered or dissolved in 10 kilos of benzol, are well stirred with a solution of 10 kilos of potassium permanganate in 1 cubic meter of water at the ordinary temperature until the color of the permanganate has vanished. The mixture is distilled with steam, and the resulting product crystallized from petroleum ether, whereby the camphor is obtained in a pure state. It is claimed that by this process a very superior camphor is produced because by-products are "wholly avoided."

U. S. patent No. 790,601, issued May 23, 1905, embodies a process by means of which camphor is produced by the direct oxidation of isoborneol esters in place of isoborneol itself, by such agents as chromic acid, nitric acid, permanganate, sulphuric acid, manganese, Caro's acid, etc., working either in solution or in suspension. Various esters may be employed, such as the acetate, benzoate, formate, etc., but the one generally preferred is borneol acetate, on account of its greater accessibility. Glacial acetic acid may be employed as a solvent of the ester. The oxidation may also be accomplished in water.

It is stated in U. S. patent No. 801,483, issued October 10, 1905, on a process for manufacturing of camphor, that it is well known that borneol and isoborneol can be transformed into camphor by the usual oxidizing agents, such as chromic acid, permanganate and the like, but they possess the drawback of contaminating the camphor with by-products which materially hinder the subsequent purification of the camphor. This difficulty is overcome in this patent by the use of ozone. It was at first believed that the use of this oxidizing agent would be impossible or impracticable because of the possibility of forming "additive products which, by reason of their tendency to explode, would have rendered the process technically impossible." Experience, however, has shown that this apprehension was entirely without foundation. It should also be stated that ozone does not produce camphor, as do other oxidizing agents, when acting on camphene, but camphenilon and formaldehyde. The method is applied in the following manner:

"Ten kilos of borneol are dissolved in 75 kilos of 95 per cent. acetic acid and ozone at the ordinary temperature, passed through until the greatest part escapes practically unchanged. The main portion of the acetic acid is then distilled off; the residuum is diluted with water, neutralized with soda, and the deposited camphor purified by known means."

Petroleum ether can also be used as a solvent in which oxidation may be effected.

U. S. patent No. 801,485 covers a process for converting borneol or isoborneol into camphor by means of oxygen or air. The method consists in vaporizing borneol or isoborneol and subjecting the vapor to the action of oxygen either with or without the presence of so-called "catalytic" reagents; for example, isoborneol is heated to about 170° C. and volatilized by a current of oxygen or air. The mixture vapors are slowly passed over copper wire or through glass tubes filled with fragments of earthenware heated to a temperature of from 175° to 180° C. The cooled product contains from 6 to 25 per cent. of camphor, depending upon the length of oxidation and the dilution of the oxygen. "Other ketones or aldehydes are not produced."

According to U. S. patent No. 802,792, issued October 24, 1905, the methods commonly recommended for the production of camphor are not satisfactory. The author of this patent found that chlorine converts isoborneol rapidly and easily into camphor either in a gaseous state or in solution, using such solvents as water, carbon tetrachloride, benzene, or chloroform. When chlorine gas is passed over finely powdered isoborneol, the following reaction takes place:

$$\underset{\text{Isoborneol}}{C_{10}H_{18}O} + 2Cl = \underset{\text{Camphor}}{C_{10}H_{16}O} + 2HCl$$

The oxidation develops much heat, which is controlled both by external cooling and by mixing the chlorine gas with some inert gas such as air or carbon dioxide. The temperature must be kept at or near 30° C. An aqueous solution of the chlorine works very satisfactorily. As long as any unconverted isoborneol is left the chlorine does not act on the camphor.

Another patent issued October 24, 1905, No. 802,793, covers a process for the manufacture of camphor by the action of the so-called "gaseous nitrous acid" on borneol or isoborneol, either solid or in solution. The reaction is best brought about by dissolving these several compounds in such solvents as chloroform, ether or ligroine and passing the gas through the solution until reaction is complete. For example: "In an enameled vessel, which is furnished with a stirring arrangement and a cooling apparatus, 10 kilograms of isoborneol are subjected to the action of well-dried nitrous gases which are passed in by a tube. The escaping fumes are compelled to pass through a reflux condenser. As soon as all the borneol is liquefied the vessel is cooled from outside with water, and the introduction of gas is continued until the liquid has attained a bluish green coloration. The mixture is now allowed to stand, care being taken to prevent the temperature rising above 60° to 70° centigrade. During this time nitrous fumes are evolved. After about four or five hours the contents of the vessel are poured slowly into 100 liters of water, whereupon the camphor at once separates in the pure state."

"My process leads to a quantitative yield of camphor pure and free from by-products."

A process for manufacturing borneol from pinene hydrochlorid was protected by U. S. patent No. 826,165, August 17, 1906, based on the well-known Grignard reaction. It consists in warming a mixture, with stirring, of ethylbromid, dry ether and magnesium until a reaction ensues. Just before the reaction is completed, a suitable quantity of pinene hydrochlorid dissolved in dry ether is gradually added to the stirring mixture. When the reaction terminates, the vessel is cooled with water and oxygen, or atmospheric air is passed through the mixture, until oxygen is no longer absorbed. Ice is then added, and the mixture rendered acid by dilute acids which cause a separation into two layers. The upper ethereal layer contains the borneol. The lower aqueous layer is withdrawn, the ether distilled from the borneol, which can be purified by crystallization from such solvents as petroleum ether, benzene or alcohol.

THE NATIONAL FORMULARY AS A LEGAL STANDARD, AND SOME OF ITS DEFECTS.[1]

By George M. Beringer, Camden, N. J.

The druggists of the United States are confronted by a paradox. "The National Formulary of Unofficial Preparations" has been declared by the Federal Food and Drugs Act of June 30, 1906, to be "official," and some of the State legislatures have already followed this example in State acts. Thus a number of preparations that, because of lack of merit or insufficient trial, were denied admission in our Pharmacopœia, and a number of others that for various reasons were dismissed therefrom as no longer worthy of official standing, are all declared by law to be "official" and of the same value as legal standards as the pharmacopœial "drugs." (The word "drug" is used here in accordance with the new legal definition of the word.) The term "official" as used and limited by pharmacopœial authority is by legal enactment perverted to cover the "unofficial." The opinions of experts, physicians and pharmacists alike, and of men who have devoted their lifework to the study of pharmaceutical problems, are thus ruthlessly cast aside by legislators who have never seen either a Pharmacopœia or National Formulary, and "the tests laid down in the National Formulary" (which work is noteworthy for the absence of tests) are declared of equal legal authority and standing as the voluminous and exact tests of the Pharmacopœia.

The writer does not want to be misunderstood in thus calling attention to the anomalous condition existing. The enactment of pure food and drug laws is "righteous legislation," meriting the support and encouragement of every patriotic and honest citizen. On the other hand, such laws should be as just to the manufacturer as to the consumer; equitable alike to producer, dealer and consumer. Further, they should be free from misstatements and errors so as to afford a permanent relief and escape adverse legal decisions.

The movement inaugurated by the American Pharmaceutical Association, looking toward the establishing of uniformity of medicines dispensed on physicians' prescriptions for which there was no authoritative standard, which culminated in the National Formulary, was a correct and wise movement, and it is to be regretted that the scope of that work was not restricted to this particular field and kept within well-defined limits.

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[1] Read at the Annual Meeting of the New Jersey Pharmaceutical Association, Asbury Park, June 13, 1907.

Not the least defect in this book is the desire of the authors to extend the work beyond reasonable bounds. The same spirit and ideas that led to the inclusion in this edition of formulas for battery fluids, antiseptics, corn cure, camphor ice, bay rum and talcum powder, if allowed to go on unchecked in subsequent editions, may include formulas for hair dyes, hair tonics, beverages, skin foods, and the hundreds of toilet articles and domestic aids that are being sold by the druggists.

The desire to offer Formulary substitutes for all proprietary medicines prescribed by physicians, has been carried to the extreme, and in some instances led to still greater confusion and diverted the prescriber still further from the true ethical position of prescribing such combinations of simple and official remedies as are best suited to each patient.

If, on the contrary, the original intent to limit this work as portrayed in the preface to the first edition in the following language: "Without referring to the more ephemeral preparations, or to such as are of a proprietary character, or are used by the public for self-medication, there is a large number of others, which are more or less frequently prescribed by physicians or demanded by the public, but which are not recognized by the Pharmacopœia, either because they were not deemed by the revisers to be of sufficient importance to be included in the official work, or because they originated subsequently to the appearance of that work, or for other reasons," had been carefully and systematically carried out, a far greater degree of uniformity would ere this have been established. Our legislators, now placing the stamp of legal standard upon the volume, should have found a work of accepted authority, and the drug trade should not have been found in a state of unpreparedness and thrown into confusion by these acts of legislation. The volume itself bears ample internal evidence that the committee compiling it did not anticipate such early and broad legislation.

It becomes, however, our duty to frankly criticise the errors and defects existing in the book, especially if these are of such a character as to render it unsafe or dangerous as a legal standard. The scope of this paper will not permit the discussion of all of the errors existing, and the writer will have to limit this criticism to types of errors with a few specific illustrations.

In the Pure Food and Drugs Act passed by the New Jersey Assembly (Laws Session of 1907, Chapter 217), in the operatic language of the day, the druggists of the State have been handed a lemon. This act deems as adulterated a drug sold under or by a name recognized in the United States Pharmacopœia or National Formulary, if it differs from the standard of strength, quality or purity as determined by the test laid down in the United States Pharmacopœia or National Formulary official at the time of the investigation. It makes it an offence to distribute or sell, or manufacture for distribution or have in possession with intent to distribute and sell such article or drug, under a penalty of $50 for the first offence, $100 for the second, and $200 for the third and each subsequent offence.

With such a stringent and unnecessarily harsh law confronting us, is it not imperative that the pharmacists insist that our legal standards be correct, and that, at the earliest date possible, the National Formulary be revised by a competent committee with the view to its legal standing and instructed to change its scope and formulas so as to make them a satisfactory authority?

The authors of the National Formulary have already published a list of corrections of errors and three reconstructed formulas, but this by no means covers all of the existing errors or of the formulas that are in need of reconstruction.

On critically examining the volume, one is impressed with the clumsy and unscientific way in which quantities are frequently given, especially in the alternative quantities stated in the apothecaries' system. The word "troy" ounce is incorrectly used for the "apothecaries'" ounce throughout the entire volume, and the occurrence of such statements as 2⅔ troy ounces, 5⅓ troy ounces, 1⅝ fluidounces is common. It certainly would have been more in keeping with pharmacopœial example and correct pharmaceutical custom to have stated these fractions in drachms, grains, fluidrachms, and minims.

While the preliminary notices explain that "the alternative quantities are proportional, but not identical, and therefore not interchangeable with the metric quantities given," it is but fair to assume that in any single formula two equivalents of the fluidounce should not be given if the quantities are proportional. As an example of this type of error, the formula for glycerite of guaiac is cited, where on one line 1 fluidounce of solution of potassium hydroxide is equivalent to 32·5 c.c., and on the next line 1 fluidounce of glycerin is equivalent to 30 c.c.

The nomenclature and titles adopted should have been in harmony with those of the Pharmacopœia. As an example, "phenol" should have been used, not "carbolic acid," and the several titles in which this occurs likewise need correction. The titles and synonyms should also be in accordance with a uniform style or rule and in accord with modern ideas of chemistry. This would have eliminated such synonyms as "syrup of the hypophosphites of *lime* and *soda.*" Some of the Latin titles adopted are unfortunate, as, for example, "elixir chloroformi compositum" for a preparation that is not an "elixir" within the meaning of any modern pharmaceutical definition of that term. Another title that appears as a misnomer is "syrupus hydrochlorophosphatum," with "compound syrup of phosphates with quinine and strychnine" as the English translation of that title. As the hydrogen chloride present in the formula given per litre is only that in combination with 4·4 grammes quinine hydrochloride, the presence of "hydrochlorophosphates" is hard to conceive, and certainly does not warrant such title. The quinine salt may be replaced by the equivalent amount of the alkaloid, and the Latin title corrected to correspond with the English translation and the synonym given dropped.

Another obsolete and incorrect title is "Syrupus Actaeæ Compositus," which should be changed to Syrupus Cimicifugæ Compositus. When it is recognized that the genus cimicifuga was delineated by Linnæus in 1774, and that the American cimicifuga or "black cohosh" was so named and described by Nuttall in 1818, it must be apparent why the name actae given to another distinct genus should not enter into this or other correct title for a preparation made from Cimicifuga racemosa (L) Nutt.

The method of citing botanical sources and authorities by the final addition in brackets of the common or English name of the plant grates harshly on the minds of those who are accustomed to see and use botanical binomials correctly. This is particularly noticeable in the section devoted to fluid extracts. As an example, "From the bark of the root of Cornus Florida Linné (dogwood)" would be more correctly stated: "From the bark of the root of dogwood, Cornus florida Linné." On page 143, we are informed in a note that "Mullein flowers are obtained from Verbascum Thapsus, Meyer." The German Pharmacopœia, from which the formula is taken, states that mullein flowers are obtained from two distinct species, Verbascum phlomoides and Verbascum thapsiforme, but does not give as a source the common Mullein, Verbascum Thapsus, Linné.

The title "Fluidextractum Convallariæ" should have florum added to distinguish this from the pharmacopœial "Fluidextractum Convallariæ" made from the rhizome and roots.

The introductory notes to the section on pills contain several items of interest to the manufacturers whose products must comply with these legal standards or else be deemed as adulterated or misbranded, and likewise to the retailer who sells the manufacturer's products or who proposes to prepare small quantities of pills extemporaneously. A "pill" must "weigh not less than 0·06 gramme or 1 grain," so that we must cease labeling the most active forms of such medication pills if under that weight. The directions for "sugar-coating" may answer for the pharmacist who is compelled to extemporize a method for coating a few pills for a prescription. The product of the "official" directions would be misbranded if labeled "sugar-coated" as the coating is acacia and sugar of milk. It is safe to venture the assertion that no manufacturer uses this method for sugar-coating on a commercial scale. Yet this is the *only legal standard* for sugar-coated pills. For silver-coating a one-pound ointment jar is directed irrespective of the quantity. Surely such directions should be omitted from this book and relegated to the various unofficial works on practical pharmacy, where errors cannot become a source of annoyance and danger to honest dispensers.

We regret to note in this edition the introduction of a new "hobby," namely, the use of saccharin in certain formulas. Syrup of quinidine contains 32 c.c. of solution of saccharin and about 900 c.c. of syrup of orange flowers in each 1000 c.c.; glycerinated elixir of gentian contains 30 c.c. of solution of saccharin, 400 c.c. of glycerin and 200 grammes of sugar in 1000 c.c.; elixir terpin hydrate contains 1 c.c. solution saccharin, 400 c.c. glycerin and nearly 200 c.c. syrup in 1000 c.c., and the compound cathartic elixir contains 4·5 grammes of saccharin in addition to nearly 700 c.c. aromatic elixir in 1000 c.c. As official saccharin is considered as at least 500 times the sweetening power of sugar, we have in this latter formula the equivalent of 3,250 grammes of sugar plus the sugar present in the aromatic elixir. Can it be argued that saccharin is needed in any of the formulas cited? If not, then its use is an abuse that should be discontinued.

The compound cathartic elixir of this edition is so radically different from that of the former edition that it can never be substituted therefor. The two formulas placed in parallel columns will strikingly illustrate this, and suggest that if the formula of the second edition was so unsatisfactory as to necessitate an entirely new formula, its use could not have been extensive and the preparation should have been dismissed.

ELIXIR CATHARTIC COMPOSITUM, N. F.

SECOND EDITION.

Fluid extract of senna	125 c.c.
Fluid extract of podophyllum	62 c.c.
Fluid extract of leptandra	50 c.c.
Fluid extract of jalap	50 c.c.
Potassium and sodium tartrate	125 gm.
Sodium bicarbonate	16 gm.
Compound elixir of taraxacum	250 c.c.
Elixir of glycyrrhiza, a sufficient quantity to make	1000 c.c.

THIRD EDITION.

Fluid extract of frangula	125 c.c.
Fluid extract of senna	100 c.c.
Fluid extract of rhubarb	62 c.c.
Spirit of peppermint	14 c.c.
Solution of potassium hydroxide	4·5 c.c.
Saccharin	4·5 gm.
Aromatic elixir (U. S. P.), a sufficient quantity to make	1000 c.c.

It certainly was not the intent to have the Formulary conflict with the Pharmacopœia, and so the formula for balsamum traumaticum could have been omitted, as in the note we are advised that "The official tinctura benzoini composita is a simplified preparation intended to replace the above compound." Again, in the note under soluble tincture of tolu, we are told: "A mixture of 32 c.c. of this preparation with 468 c.c. of syrup yields a product which may be used as syrup of tolu in all cases where the official preparation is not required." Syrup of tolu is a pharmacopœial title and preparation, and such substitution would undoubtedly be technically construed an adulteration. The note to solution of ferrous iodide advises: "On mixing 1 volume with 11 volumes of syrup (U. S. P.), the product will be practically identical with syrup ferrous iodide U. S. P." To make this statement correct, the diluted hypophosphorous acid directed in the formula would have to be increased from 25 c.c. to 285·7 c.c. These notes, used so freely throughout the work, contain numerous errors and should be critically examined and in many cases eliminated.

In my judgment the most serious defect in the National Formulary is the uncalled-for liberties taken with the formulas of the French Codex and the British and German Pharmacopœias, and the misstatements regarding these pharmacopœias introduced in the notes. It must be admitted that the introduction or use of these foreign pharmacopœial formulas in this country came from abroad, either from prescriptions obtained abroad or from physicians educated abroad, or copied from foreign literature, and that in all such cases the preparations of the foreign pharmacopœias are intended, and the intent should be invariably complied with by the pharmacist.

In some localities the demand for a number of these foreign preparations has become quite extensive, and it has always been the practice for pharmacists having such demand to keep on hand the specified preparations made in accordance with the foreign authorities.

The desire to establish international standards for medicines is certainly a laudable one, and it cannot be considered as wise or as encouraging to such a purpose to unnecessarily modify or alter satisfactory formulas of any such authority. Yet, in this work, this appears to be quite as frequently the rule as the exception. We will consider a few of the formulas that illustrate this defect.

In the note added to Linimentum Saponato-Camphoratum we are told that "Solid opodeldoc is directed by the G. P. to be prepared with soap made from animal fats; but pure white castile soap may be used, provided it has been previously deprived of water." Yet the formula directs "white castile soap" and not previously deprived of water. The German Pharmacopœia directs "medicinal soap," official in that pharmacopœia under the title "Sapo Medicatus," and directed to be made from equal parts of "lard" and "olive oil" saponified with sodium hydroxide. The proportion of the constituents in the German formula for opodeldoc is not the same as given in the Formulary.

The note to stronger solution of ammonium citrate tells us "liquor ammonii citratis (B.P.) may be prepared from this solution by mixing 1 volume of it with 4 volumes of water." As the liquor ammonii citratis (B. P.) contains 125 grammes of citric acid in 1000 c.c., a preparation five times as strong should contain 625 grammes citric acid in 1000 c.c., and not 560 grammes as directed.

The solutions of the organic salts of iron originated in Germany very largely from the excellent work of Dietrich, and good formulas for a number of these popular remedies were long ago published in "Dietrich's Manual." The liquor ferri albuminati is official in the German Pharmacopœia, and as a flavoring, cinnamon water and aromatic tincture are there directed. These are more efficient flavors for the iron salts and less prone to change than the aromatic elixir substituted by the National Formulary.

Mistura oleo-balsamica, our old German friend Hoffmann's balsam of life, has the German Pharmacopœia title as a synonym, but the formula is changed from that of the G.P. by the introduction of oil of orange flowers and the substitution of oil of cloves for eugenol, and the proportions of balsam of peru and oil of cinnamon are also changed.

In the formula for "infused oils," a substitution of equal parts of lard oil and cotton-seed oil for olive oil cannot be too strongly condemned, as it is a well-known fact that such mixtures of oils rapidly undergo change and become rancid. As if to make the substitution more positive, the note attached advises: "The above process is to be used for the preparation of oleum hyoscyami of the G.P. and similar infused oils." An equally reprehensible and totally unwarranted substitution is the use of the French Codex title, balsamum tranquillans as a synonym for compound oil of hyoscyamus (N.F.), and the note states: "The baume tranquille (balsamum tranquillans) of the Codex is a more complex preparation, not identical with the above, but possessing about the same properties." I cannot conceive that this was an intentional sophism.

Pulvis Gummosus (G.P.) is given as a synonym for Pulvis Acaciae Compositus (N.F.), but the ingredients are present in different proportion.

Under the title Pulvis Cretæ Aromaticus, a formula is given containing 6 parts of saffron, and the note to this formula states: "This preparation is equivalent to the Pulvis Cretæ Aromaticus of the B.P." This authority adds the following note: "If a product of bright color be desired, the saffron may previously be moistened and triturated with a little water or alcohol, or the fresh and faintly damp mixture may be subjected to considerable pressure in the triturating process." I am unable to find such a note in the British Pharmacopœia, and the formula there given *does not* contain any saffron, and the proportion of the other ingredients varies somewhat from that given in the Formulary.

The note added to Syrupus Papaveris states: "The product is practically identical with the Syrupus Papaveris of the B.P." I am unable to find this as an official preparation in the British Pharmacopœia. The only syrup of poppies in the British Pharmacopœia is the Syrupus Rhœdos made from the red poppy petals, an entirely different drug.

ABSTRACTS OF THESES ON CHEMICAL SUBJECTS.[1]

By J. W. Ehman.

Magnesii Carbonas.—By C. M. McClure. An investigation of the relation between impurities in magnesium carbonate and the difficulty in filtering and keeping stock solution of magnesium citrate. The following table gives, in part, the results of chemical analysis of six samples of magnesium carbonate:

	U.S.P. Requirements.	I	II	III	IV	V	VI
Per cent. MgO by residue on ignition	40	42·66	41·45	43·10	42·28	43·00	42 66
Per cent. MgO by direct titration, without ignition		42·32	41·12	42·89	41·21	40·79	40·00
Per cent. MgO in residue from ignition	96	95·93	96·41	95·22	94·48	93·43	92·75
Per cent. Si as SiO_2		·063	none	·023	·136	·236	·183
Per cent. Al and Fe calculated as Al_2O_3		·0076	none	·0163	·0096	·023	·129
Per cent. Ca as CaO		·105	·116	none	·430	·158	·209

Experiments were made with each sample by dissolving 15 grammes in a solution of 33 grammes citric acid in 120 c.c. of water, filtering and allowing to stand:

IV showed no precipitate.
II showed a very slight precipitate in ten days.
I and III showed a slight precipitate in seven days.
VI showed a distinct precipitate in seven days.
V showed a distinct precipitate in four days.
In ten days the precipitates in I, III, V and VI had increased in amount.

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[1] The experimental work embodied in these theses was performed in the chemical laboratory of the Philadelphia College of Pharmacy.

These precipitates were filtered off and tested; all contained silica except II and none contained calcium. Another solution was made of V and was allowed to stand without previous filtration. In seven days considerable precipitate had formed, which responded to tests for silica, but not for calcium.

The author concludes that silica causes the difficulty in filtration in proportion to the amount present, all those solutions which were difficult to filter giving a subsequent precipitate of silica. This subsequent precipitation is due to silica, which also promotes precipitation of magnesium citrate.

II made a permanent solution because it contained no silica.

IV made a permanent solution because the silica present was all filtered out owing to its insoluble condition.

Syrupus Acidi Hydriodici.—By P. S. Lane. Eight samples assayed by the U.S.P. method gave percentages of HI ranging from ·44 to 1·18, average ·91.

Three gave decided tests and five slight tests for H_3PO_2. None contained free iodine, although one had a reddish-brown color. One contained considerable glycerin.

Acidity, determined by titrating with sodium hydrate V.S. and calculating to HI, gave higher results (due to presence of tartaric acid, acid potassium tartrate and hypophosphorous acid) in every case except one; in this case the higher result by the U.S.P. assay was due to the presence of potassium iodide.

Difficulty was experienced in determining the end reaction on account of the reducing action of H_3PO_2 upon $AgNO_3$, causing blackening of the solution. The reduced silver may be removed by filtration, but in any case high results are obtained owing to reduction of a portion of the $AgNO_3$.

Assay of Benzaldehyde.—By E. S. Wright. Difficulty was experienced in determining the exact end reaction and in obtaining concordant results in the assay of benzaldehyde. Three assays of the same sample by the official process resulted in 79·423, 78·023 and 77·382 per cent.

Rosolic acid was tried as indicator, but proved unsatisfactory.

The official assay was modified to the extent of heating the benzaldehyde, kerosene and sodium sulphite together in a glass-stoppered bottle to 60° C., cooling and then titrating. Results on seven assays of the same sample ranged from 80·33 to 86·916 per cent., average 83·96.

An attempt to adapt the official assay for formaldehyde to the assay of benzaldehyde failed.

Treatment with an excess of sodium bisulphite and titration of the excess of bisulphite with iodine V.S. also failed, owing to the difficulty in determining the end reaction.

Tinctura Iodi.—By A. E. Pflaum. A number of samples of tincture of iodine obtained from different pharmacists were assayed. All those containing potassium iodide, made by the new official process, were of the required strength. Two samples containing no potassium iodide were deficient in iodine.

Acidum Hydrochloricum Dilutum.—By S. H. Feldman. Ten samples of diluted hydrochloric acid obtained from different pharmacists were assayed, the results ranging from 9·5 to 12·3 per cent. HCl, average 11·05 per cent.

THE PENNSYLVANIA STATE PHARMACEUTICAL ASSOCIATION MEETING.

By Charles H. La Wall.

(*Concluded from page 341.*)

ABSTRACTS OF PAPERS.

Cataplasm of Kaolin.

I. V. S. Stanislaus.

A difference in commercial kaolin is reported, especially as regards the amount of moisture which was found to be present, running as high as 14·2 per cent. in one of the samples, and affording an explanation as to why different quantities of glycerin are required by different samples of kaolin in order to make a product which shall at all times be uniform. The difference in the appearance of the samples when examined microscopically, and as regards fineness of texture was also noted, and a variation in this respect will produce corresponding variations in the finished product. The following deductions were made by the author:

(1) Kaolin should be of the variety known in commerce as bolted china clay. (2) It should be heated for at least one hour with constant stirring before the boric acid is added. (3) The glycerin should be heated to a temperature of 100° C. before adding to the mixed powders. (4) After the addition of the glycerin the heating and

stirring should be continued for at least one hour. (5) The product should be stirred thoroughly until cool. (6) After the volatile flavoring substances are added, the product should at once be packed into air-tight containers.

THE MANUFACTURE OF PERFUMERY BY THE PHARMACIST.

I. V. S. Stanislaus.

A review of various commercial methods of obtaining floral odors with reference to the synthetic perfumes constitutes the introductory part of this paper. The difficulty of securing good high-grade fusel oil from alcohol was noted. Even with cologne spirits few of the commercial samples answered the requirements of the perfume maker. Ordinary alcohol, treated with two ounces of animal charcoal per gallon for one week, and then filtered through talcum, gives very satisfactory results. A formula for a stock solvent called "perfumers' spirit" is given.

To each gallon of the above filtrate add—

Spirit of nitrous ether	30 minims.
Cumarin	20 grammes.
Vanillin	10 grammes.
Oil of nutmeg	30 minims.
Tincture of benzoin, Siam	1 ounce.

After which follow a number of formulas for the various floral and popular odors, all of which are possible to be made by the retail pharmacist at a cost of between six and eight dollars a gallon, with the exception of extract of violet, which will cost about twelve dollars and a half per gallon.

LIQUOR POTASSII ARSENITIS.

E. F. Cook, P.D.

A great variation having been observed in the appearance of samples of this preparation as made by a class of several hundred students, all working under similar conditions, and supposedly following similar directions, led to an investigation of the possible cause. Some preparations were observed where almost entire precipitation of the coloring matter had taken place, while others were perfectly normal in appearance. When the preparation was made according to the U. S. P. formula by strictly following the official directions, a normal preparation was obtained which possessed the characteristic well-known light reddish-brown color, transparent in certain lights and slightly opalescent in others.

The coloring matter of the preparation is due to the resinous principle santalin, which colors the compound tincture of lavender used in the preparation, and when the compound tincture of lavender is added to the hot solution of potassium arsenite before diluting to the official quantity, a marked precipitation of the coloring matter in the form of a reddish flocculent deposit was noted. This precipitation was not obtained in the finished preparation as properly made, even after some minutes' boiling, and it is probable that the variation in color results from adding the compound tincture of lavender at too early a stage in the process.

NOTE ON THE ACTION OF SOME ANTISEPTICS ON SOME STARCH-CONVERTING ENZYMES.

Henry Leffmann.

It is well known that the starch-digesting enzymes are restrained by salicylic acid and similar substances. The author believed that the restraining action was dependent in part upon the ratio between the amount of enzyme and the restraining agent. Some experiments were performed which proved to be very interesting. It was found that small proportions of the antiseptic acted as a stimulant, and larger proportions as a depressant. The antiseptics experimented with were salicylic acid, alcohol and oil of cassia, the latter being tried because it has been used for keeping starch solutions in the laboratory. The experiments are too few to form a basis for generalization, but are suggestive for further investigation.

CHEMISTRY IN THE STORE WINDOW.

F. P. Stroup.

Some suggestions are offered for interesting and novel window displays, which, by reason of their being somewhat out of the ordinary, ought to attract attention to the fact that the pharmacist is more than a mere purveyor of merchandise.

Silver Tree.—Dissolve two ten-cent pieces in 2 fluidrachms of concentrated nitric acid, evaporating nearly to dryness to drive off excess of acid, cool, and dissolve the resulting crystalline salts in sufficient distilled water to make a saturated solution. This solution will be slightly blue on account of the copper which is alloyed with coin silver. Place the solution in a glass vessel with a curved bottom. Add a drop of mercury the size of a large pea and set aside for twenty-four hours or place in the window. An arborescent growth of mercury and silver amalgam will be produced which may be kept indefinitely.

Lead Tree.—Place in a tall jar or wide-mouthed bottle a solution made by dissolving 4 ounces of lead acetate in one quart of water. Place the vessel where it will not be subject to vibration, and suspend in it a strip or cylinder of zinc; battery zinc answers the purpose very well. An abundant growth of crystalline spangles of metallic lead will collect on the zinc within forty-eight hours.

Tin Tree.—Dilute commercial tin chloride solution with forty times its bulk of water and suspend a strip or pencil of zinc in it as in the case of the lead tree. The growth will be very similar to that of the lead tree.

The most striking growths that can be obtained from purely inorganic substances are those which are formed in solution of sodium silicate in the following manner. In the bottom of a wide-mouthed bottle or glass jar, distribute about an inch of clean sand. Place on top of it small crystals (from about the size of a pea to that of a hazel nut) of alum, copper sulphate, ferrous sulphate, manganous sulphate, chrome alum, ammonio-ferric alum, magnesium sulphate, calcium chloride, lead acetate and nickel and ammonium sulphate. It is not necessary to have all of these. Any one of them will do, but a mixture of several gives more striking results. Having distributed the crystals upon the sand, introduce carefully enough solution of sodium silicate, made by diluting the commercial solution with an equal bulk of water, to cover the crystals with liquid to a depth of three or four inches. The plant-like growths will begin immediately, and within twenty-four hours will assume fantastic and interesting forms.

STANDARDIZATION OF DIPHTHERIA ANTITOXIN.

W. A. Pearson.

A review of the subject of diphtheria antitoxin and the method of standardization of the antitoxin is written in a very clear and interesting manner. Attention is called to the necessity of keeping the supply of antitoxin under proper conditions in the store so that its efficiency may not be impaired.

LABORATORY NOTES.

Willard Graham.

Analytical data which have accumulated since the last similar contribution was presented at the twenty-ninth annual meeting, were presented upon the following subjects: Acid stearic, acetphenetidin, balsam Peru, barium sulphide, coca leaves, gelatin, iron and potassium tartrate, lard oil, lupulin, oil of anise seed, oil of cloves, soluble ferric phosphate, soluble ferric pyrophosphate, storax, tapioca flour.

A MODIFICATION OF THE U. S. P. TESTS FOR GURJUN BALSAM IN COPAIBA.

C. E. Vanderkleed and H. W. Lynch.

A review of the various modifications of the Gurjun balsam test constitutes the major portion of the paper, the authors contributing a contact method, using the reagents as in the official test, stating that a pronounced reaction is given with as little as 5 per cent. of Gurjun balsam in copaiba, and eliminating the necessity for a control test. The test was applied as follows: Three or four drops of the balsam are dissolved in 3 c.c. of glacial acetic acid. One drop of freshly prepared 10 per cent. solution of sodium nitrite is added, and the mixture very carefully poured upon the surface of 2 c.c. of concentrated sulphuric acid in a test tube. If Gurjun balsam be present a violet color will appear at the point of contact and spread throughout the upper layer.

SOLUTION OF ACID PHOSPHATES, N. F.

C. E. Vanderkleed and Harry Bernegau.

Attention is called to the fact that a large amount of hydrofluoric acid is sometimes found in commercial solutions of acid phosphates on the market; but the most serious objection, according to the authors, is, that when made according to the directions of the N. F., the solution contains 7 per cent. of free sulphuric acid and very little free phosphoric acid, even with the use of bone ash of the highest obtainable quality.

THE DISPENSING PHYSICIAN AND PRACTICING PHARMACIST.

Thomas H. Potts.

The tendency on the part of some practitioners in both the medical and pharmaceutical professions to encroach on each other's work is deplored by the author, who places the blame therefor on purely mercenary grounds, and who favors legislative enactments for correcting the evil.

SOME EVERYDAY PROBLEMS.

Dr. C. B. Lowe.

Some practical points are taken up in an interesting way under the following subheads:

The Care of the Store, with reference to cleaning tiling, oiling floors and minimizing the dissemination of dust.

The Soda-Water Fountain.—If the labor is added to the cost of making ice cream by the pharmacist himself, it does not pay. Several of the proprietary ingredients, to increase the quality of ice cream, were tried with poor results. Decorating the fountain by growing plants and cut flowers is a very attractive way of beautifying the store.

Store Lighting.—Gas is cheaper than electricity, but in summer contributes more heat than the latter and adds to the discomfort. The Nernst electric lights are more satisfactory for the store proper, the ordinary incandescent lights being better adapted for the prescription department, etc.

The Prescription Counter.—The prescription counter is often made subsidiary when it should be of first importance in the allotment of store space. A Bunsen burner arranged horizontally provides a good way for melting sealing-wax. A number of observations are also made on keeping distilled water, dispensing capsules, cleaning ointment slabs, etc.

The Laboratory.—This should be a separate department wherever possible. A convenient filtering rack is described, and a note on keeping and dispensing lime water is also given.

Commercial Problems.—Advertising the pharmacy by means of the mimeograph, sending out periodical bulletins to regular customers is very highly commended. Some notes on methods of recording cash and credit sales are also appended.

The paper closes with a consideration of the methods possible in stimulating the interest of physicians in the U. S. Pharmacopœia.

URANALYSIS AS AN ADVERTISEMENT.

E. E. Heffner.

To be able to give a thorough chemical analysis of urine when required is a very effective way to impress your professional ability on the physicians in your neighborhood. The cost of apparatus and reagents is but slight and the tests are easily understood and applied. A particular application in reference to patients who come for the purpose of buying some proprietary kidney cure is made, showing how the good will of the physician may be acquired under circumstances which make it very difficult. A specimen report, such as is given where an examination is made, is included, and the author advises that this work be done without cost to the physician, with the view of being more than repaid in the confidence and good will which is engendered.

QUERY 21.

W. G. Greenawalt.

The author does not believe that the pharmacist should be as accommodating as the public expect him to be at the present time, and draws comparisons between different professions and businesses in illustration of his point. He would have the Government provide slot machines where post cards and stamps could be dispensed, and have some means devised by which city directories could be kept on every street corner by the municipal authorities. Then the pharmacist could devote himself more to scientific work, as he should.

QUERY 39.

W. G. Greenawalt.

The discussion of various side lines in pharmacy constitutes the introduction of the paper, and the increasing popularity of post cards is looked upon with favor as a legitimate means of increasing the druggist's profits. He speaks of the different styles and varieties of post cards, advising against the pharmacist handling any but first-class cards, free from the vulgarity which is sometimes exhibited in cards sold in other kinds of stores.

QUERY 39.

Jacob Eppstein.

The author speaks of the cosmopolitan interest which is developed by handling cards representing scenes in various parts of the world, as they usually do, and favors the growing trade in them as not only giving the druggist a chance to increase his profits, but providing another inducement for the public to visit his store.

THE PROPRIETARIES FROM THE PHARMACIST'S STANDPOINT.

Christopher Koch, Jr.

An account of the difficulties with which the pharmacist has to contend in dispensing a preparation for which he has had no previous demand is given in detail, and the blame is laid primarily upon the physician for the growing tendency to prescribe preparations for which there is really no clinical record which entitles them to consideration. The work of the Council of Pharmacy and Chemistry is taken up and discussed in detail, and in conclusion the author advises the pharmacist to stick strictly to the U.S.P. and N.F., and impressing his neighborhood physician with that fact.

QUERY 21.

J. Leyden White.

In small towns the pharmacist does not labor under the disadvantages outlined in this query. There are no city directories and stamps are usually purchased at the post office. The query, therefore, vitally concerns only those druggists in cities of 20,000 or more inhabitants, and the advantages of maintaining this condition, where the pharmacist places himself in a position of favoring the public, are affirmatively discussed. In conclusion, he states that so long as it is good business for the department store to give free concerts, theatrical performances, art exhibitions and expensive souvenirs, it must necessarily follow that it will be good business for the wide-awake man who runs a retail drug store to have well-stocked windows, a clean and bright store, furnish crackers with his soda-water, and sell stamps.

QUERY 31.

W. O. Frailey.

This query as to the value of a hobby to the pharmacist is answered in the affirmative by the author, who believes that a properly selected interest, apart from his business and professional duties, will serve to broaden, educate and edify the pharmacist. Caution is given with reference to the tendency that some persons have to overdo this matter, and devote so much of their energy to the hobby that they have none left to devote to business. Every pharmacist who rides a hobby should at regular intervals make a searching examination of himself and his actions, with the determination to be a better pharmacist and a stronger character and make himself satisfied with life.

How to Write a Paper.

J. W. England.

In presenting a paper upon this subject before an association which has the distinction of having the largest number of papers presented at a State Association meeting, is like carrying coals to Newcastle. The author takes up the subject in a comprehensive way and in detail, summarizing as follows:

(1) The selection of the subject. (2) Its analysis into subheads and a consideration of the possibilities in the subject. (3) The putting of the various parts together so as to make a homogeneous article. (4) The actual writing of the paper, and finally its publication in some properly selected medium.

Particular attention is called to the necessity for works of reference in the pharmacist's library in order to enable him to avoid doing work which has previously been done by others. The necessity for accuracy of statement is also emphasized, the style being made subordinate, although individuality is always desirable and should be cultivated.

Query 10.

W. O. Frailey.

The primary requisite in interesting physicians in the Pharmacopœia is for the pharmacist himself to become so familiar with the book that he can approach the physician with a confidence and enthusiasm which will insure success. A detailed account of just how to approach the physician is described, and advice is given to not only call upon the physician in his own office, but to have him call at the store for samples of the preparations, if possible, so as to bring him into still closer touch than is ordinarily the case.

Query 10.

L. E. Hastings.

The U. S. Pharmacopœia is a dust-covered book on the physician's shelf, as a rule, being brought to his attention infrequently, and only prominently at the time of revision. The pharmacist is to blame for this condition, in that he does not assume the initiative in pursuing the proper method to interest the physician, and in some cases, on account of the inferior preparations, due to non-adherence to the U.S.P. directions.

QUERY 10.

E. E. Heffner.

Interest the physician first. This would be accomplished by having a comparative list of the proprietary articles most generally prescribed, together with the ethical U.S.P. preparations of a similar nature, giving the approximate cost of each. The presentation of a copy of the U.S.P. to the physician at the holiday season instead of expensive gifts of cigars, etc., as are usually given, is also advised.

QUERY 10.

O. W. Osterlund.

The present condition of affairs, which has been caused by the work of the Council on Pharmacy and Chemistry, in arousing the interest of the medical profession with regard to objectionable proprietary preparations, should be taken advantage of by the individual pharmacist in making up a number of ethical preparations and bringing them to the attention of his neighboring physician by submitting samples and literature.

QUERY 10.

R. H. Lackey.

The best method of influencing the physician in prescribing U.S.P. and N.F. preparations comprises the use of all those various methods which have been proven by experience in the hands of the proprietary manufacturer in exploiting or marketing his goods. Concerted effort of neighboring pharmacists in sampling and circularizing a line of standard preparations is the most satisfactory method of accomplishing the desired results.

QUERY 10.

F. E. Niece.

The use of the U.S.P. as an advertising medium is overlooked by the average pharmacist. In consequence of the fact that the physician is overwhelmed with all kinds of literature, let that sent out by the pharmacist be only of the highest class. Judicious sampling of carefully made preparations is of paramount importance. Short articles on such abstract subjects as percolation, specific gravity, etc., and their bearing on properly made preparations, will be found to interest the physician and give him a better opinion of the professional ability of the pharmacist. Specializing on one line at a time, such as pills, ointments, solutions, etc., is found to be the most satisfactory way of accomplishing results that count.

SHOULD THE DEGREE OF DOCTOR IN PHARMACY BE CONFERRED BY ALL COLLEGES?

James Gleghorn, Ph.G.

Pharmacy is greatly in need of some uniform system of instruction and one standard degree. Courses of instruction should be the same in all recognized schools, and something must be done to make pharmacy as attractive as the other professions. Law, medicine, chemistry and theology confer the doctor's degree. Pharmacy should not carry with it a less appropriate title. No other degree is as appropriate, because it establishes the professional character and standing of the person having it; and if pharmacy expects to remain a profession, the doctor's degree will have to be adopted as a standard.

WHAT SHOULD AN APPLICANT FOR REGISTRATION AS QUALIFIED ASSISTANT PHARMACIST IN THE STATE OF PENNSYLVANIA BE REQUIRED TO KNOW?

L. L. Walton.

Under the present pharmacy law, applicants for registered qualified assistants' licenses are expected to have acquired sufficient knowledge and experience in the apothecary business, while serving two years' apprenticeship in the drug store, to enable them to pass such an examination as shall be given them by the State Pharmaceutical Examining Board, and receive registration. It would seem, therefore, that the examiners should, under the law, prepare questions specially adapted to these applicants because of their limited experience. Such an examination should comprehend the following subjects: A good knowledge of official names and synonyms; familiarity with the properties and characteristics of drugs and medicines, so as to describe them and to recognize unlabeled specimens; knowledge of solubilities and an acquaintance with dangerous incompatibilities; maximum doses of poisons; knowledge of poison laws; proper antidotes for poisonous substances; percentage content of potent remedies; the active constituents of various crude drugs; how to care for, handle and dispense substances that are volatile, inflammable and easily decomposed; a thorough knowledge of the various systems of weights and measures; how to read and correctly interpret signs, symbols and abbreviations; how to compute doses and calculate and prepare percentage solutions.

Examinations should be prepared upon this basis, and should be well adapted to proving if the candidate has mastered the practical facts necessary to the trust imposed by the certificate given, and if a safe person to be licensed to practice as a qualified assistant pharmacist.

A HAND-ME-DOWN CONSCIENCE.

B. E. Pritchard.

Attention is called to the radical and complete change which suddenly manifested itself on January 1, 1907, in the consciences of men engaged in purveying drugs at first hand. The same drugs which previous to that time were claimed to be absolutely pure, chemically pure, and U.S.P., after that date were found to be correctly labeled with the percentage of such contaminating substances as were required to be stated under the law. The blame for the former condition is not laid upon the producer alone, the primary cause being that the jobber, goaded continually by his customers' cry for lower prices, was forced to pass the demand up to the source of supply, and those responsible for production were in turn compelled to adulterate and sophisticate in order to meet competition. Now that lying as a factor in trade-getting exacts a severe penalty, it is no longer popular. Moral: do not shop for cheapness.

ASH DETERMINATIONS OF ASAFETIDA AND OTHER COMMON DRUGS.

Albert F. Judd.

A number of analyses of asafetida, aloes, capsicum and black pepper are tabulated as regards ash. In asafetida, samples were found in which the ash was as high as 76·6 per cent., containing gypsum as an adulterant. In the aloes one sample was found to have an ash of 26·5; but as there is no standard for this constant, further investigation was postponed. One sample of powdered capsicum was reported in which there was a large quantity of red lead, bringing the percentage of ash up to 18·4. Several samples of powdered black pepper containing from 12 to 19 per cent. of ash, mainly silica, are also reported.

WILLIAM BEATTY THOMPSON.

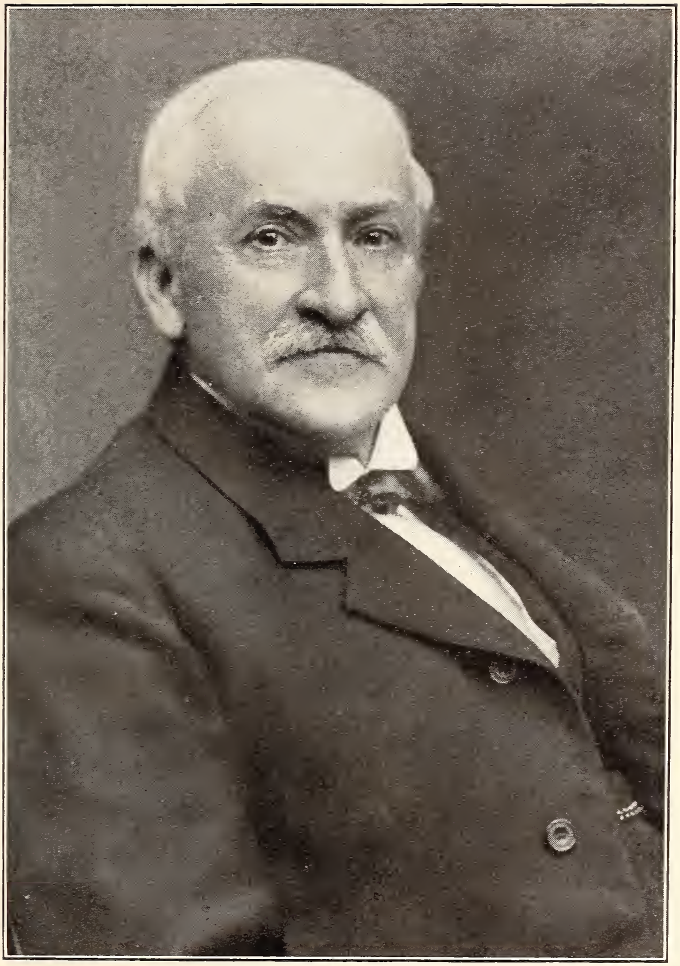
By Evan Tyson Ellis.

William B. Thompson was born September 11, 1831, and died December 7, 1906. His father was John Thompson, who was well known in this community, having filled the offices of High Sheriff of Philadelphia, and for many years that of Justice of the Peace when the appointment came from the Governor of the State and was virtually a life tenure, and Judge Thompson was especially noted for his integrity.

The son was educated in the private academy of Thomas James, a famed instructor of those days, and in 1848 entered employ as apprentice to Edward and Charles Yarnall, whose place of business was on Market Street, near Second Street, Philadelphia, and had been established in 1819. From a memorandum left by him entitled "A Chapter in Personal History" I quote his own words: "Attended the lectures of the Philadelphia College of Pharmacy during a period of my apprenticeship with the Yarnall firm, 1848–49. I did not present myself for examination and the diploma, at the end of the second term, owing to the fact that much of the work of preparing and putting together goods for shipment, which devolved upon the apprentices of that day, had to be done at night, and regular attendance upon the College courses was much interrupted. The College then was located on what was Zane, now Filbert Street. Consequently I did not present myself for examination at the end of the second session, as there was little opportunity in the wholesale business such as the Yarnalls' of obtaining other than a somewhat superficial knowledge of drugs, only their obvious physical character. Chemicals were few and rare and there were no compounds or compositions made at wholesale. Of course the number of articles handled and their great variety, chiefly as natural, vegetable, mineral, and organic substances, constituted them objects of interest, a sort of museum to the mind inquisitive.

"When it is considered that the physical weariness of a day of labor of a boy had to be followed by an evening of study, an attendance upon lectures at College, the journey home, the return, and the return again to home, there was not much spirit of energy left. To one in such a position desiring to acquire a knowledge of the manipulatory art, method and practice of operative and dispensing pharmacy, the knowledge was almost a sealed book. There was positively no means or opportunity except self-study without an instructor or a systematic term of service in a retail drug store. The latter was seldom resorted to by those in the wholesale business if they could hope to make a sufficiently satisfactory showing to enable them to pass the required examinations. Some did pass, but I remember to have felt a consciousness of a want of knowledge and a somewhat presumptive assumption in presenting myself to the ordeal. I had, it is true, in some measure qualified myself by a gratuitous service in retail stores where large prescription patronage was dispensed, accepting this means of observation and practice as an equivalent for personal service and application. But when I look back and reflect upon these occurrences, and consider how much more of actual knowledge I should have had, I can only account for my success in securing the college diploma by the fact that I had commenced business for myself." And here we may add that there was even when so young a certain sedateness about Wm. B. Thompson indicative of earnestness and sincerity quite sufficient to have gained the confidence and approval of the then Faculty of the College, for although the result of his examination was not of the highest, his subsequent business career and his reputation as a pharmacist abundantly proved, however, that this implied confidence had not been misplaced.

In 1856 William B. Thompson established himself in business at No. 1700, the S. W. corner of Seventeenth and Mt. Vernon Streets. This was then a newly settled locality, where blocks of first-class dwellings had attracted corresponding residents, and for thirty years he did a remunerative business, very justly enjoying the confidence of that section and of the medical profession; but then an apparently promising opportunity offering to engage in a wholesale drug store and no doubt affording more time to devote to his family, he



WILLIAM BEATTY THOMPSON.
1831–1906.

disposed of the store at Seventeenth and Mt. Vernon Streets and became interested with our late member, Edward C. Jones, at Fifteenth and Market Streets. This store somehow never proved much of a success to several who engaged in it, and after a limited period William B. Thompson took service with John Wyeth & Brother, where he filled a highly responsible position until his death. And this is what the firm sent to his family: "Mr. Thompson entered the employ of John Wyeth & Brother June 1, 1892, holding a position of responsibility until the day of his death, which occurred December 7, 1906, thus rounding out a period of over fourteen years of faithful and efficient service. He was a most conscientious and earnest worker in the domain of pharmacy, and an invaluable factor in the development of important pharmaceutical operations, was accurate and methodical to a degree, and had a keen appreciation of the precision so essential to insure the highest standard of efficiency.

"Mr. Thompson was much respected and beloved by those with whom he was affiliated, and his passing away was an occasion of profound sorrow on the part of those who were so fortunate as to have been his associates."

William B. Thompson was ready with the pen and contributed to our JOURNAL, as also to the *American Druggist and Pharmaceutical Record*—Professor Bedford being one of his particular friends—to the *Pharmaceutical Era*, also to the *Druggists' Circular* and other drug publications, as well as to the daily press on matters of public interest. He was a member of our college since 1858 and took at one time an active part in its workings. For nineteen years he was a member of the Board of Trustees and for fourteen years the secretary of the college.

William B. Thompson was very impressive, forceful and urbane in his delivery on the different matters that came before the college meetings. The writer will never forget the occasion of Prof. Robert Bridges' retirement in 1880 from age and disability. Mr. Thompson's review of the service of that estimable Professor was masterly and full of pathos, and the college at once granted Professor Bridges a generous annuity for his few remaining years. It was a time when the Faculty were receiving meagre compensation, but the classes were comparatively small.

William B. Thompson's mind was very much impressed with the dispensing druggists of preceding generations. In our frequent interviews he loved to descant on the merits of these. A paper of some length is left and we take from it the following. It is entitled "Reminiscence and Precept," September 28, 1906.

"When tradespeople of a craft assemble together, or when opportunity is afforded for social and conversational intercourse, the elders appear quite naturally to dwell upon the reminiscence of time and days long since past. Such retrospect seems to yield a charm to memory, and with manifest and warm interest the participants fondly recall the incidents of business and personal life, invested with all its varied experiences and observation. Thus it has sometimes happened with the present remnant or diminishing group of surviving pharmacists of the earlier days of local trade history, especially of our own city of Philadelphia, the natal place of an important era in pharmacy, as also that of medical lore. These recollections are chiefly such as are suggested by that period of time which lapsed with the third and fourth decades, and the closing years of the nineteenth century, and become descriptive in part of the personality of men, and manners of those whose business activities and life pursuit gave impress of profound and lasting character.

"The more is desired, because, whilst the day and time produced a far less number of professional representatives, it also brought into view a class of men whose sterling individuality stood for so much that has been, and properly cherished ever will be, a controlling example—especially to those more numerous, who are industriously following in such worthy tread and character footprint.

"There was much less disposition in the earlier days to measure and gauge character by vocation. However petty and trifling by comparison the transactions of smaller tradesmen appeared to be, there was as much individual character strength to be found dealing in and doling out simples, as existed in the larger branches of business, so that the apothecary, who might be viewed as in the smallest class of traffickers, was no less honored in the public esteem on this account.

"Let these submitted facts be duly considered, however, that the usefulness and value to every community of persons of the knowledge and application of pharmaceutical skill and education to human needs and physical requirement is to-day greater than ever.

The varied attainments in practical, scientific, and technical education, which are required to qualify the apothecary for all the diversified demands which are involved in his professional and moral responsibility, place him in the front rank of all his compeers in scientific pursuit, medicine not even excepted. The pharmacist is the mentor of the physician, and whatever may be the spirit of benevolence and humane purpose involved in the application of medical offices to human suffering, the apothecary precedes his professional ally in providing and properly preparing the very agents which fulfil that benevolent design.

"It is possible only to present types as ideals, at some risk it is feared—unintentional of course—of making ungenerous discrimination by omission of others equally worthy of recognition. Those of us who can recall will remember with what grave decorum and innate commanding dignity such honored predecessors here in Philadelphia as William Biddle, Daniel B. Smith, William Hodgson, Joseph C. Turnpenny, Henry M. Zollickhoffer, Thomas J. Husband, Charles Ellis, and Dillwyn Parrish presided over their respective establishments. What a satisfactory assurance of well-reposed confidence their presence gave to every confiding patron, imparted by gentle, calm demeanor, and undisturbed poise of habit! Each countenance bore an impressive equanimity and even disposition that stamped its placidity. The genial attributes of cultivated disposition never weakened the force of character or the firmness of decision. Each preserved through the walks of a venerated age an undeviating self-control which ever and always underlies exalted character, and finally, should these allusions, perhaps too feebly expressed, prove an inspiration, and serve as impetus to emulate, these lines may not have been written without useful purpose."

William B. Thompson was very much opposed to the practice of some Western colleges turning out pharmacists without the shop experience. In an article which appeared in the *Amer. Druggist and Phar. Record,* November 9, 1893, he says after referring to a resolution passed by the American Pharmaceutical Association in 1871, "That colleges of pharmacy should be controlled by pharmacists," and that "a practical experience" in the store should be a *sine qua non* among the requirements for graduation, "that as reasonably might it be expected that an artisan could acquire a knowledge of his trade by studying models of tools, and simply inspecting the material of which he should construct his work."

We find among his papers the following maxims printed in large type; whether displayed in his store or handed to apprentices we do not know. But these words show the character of the man:

BUSINESS LOGIC.

POOR DRUGS—POOR RESULT.

POOR RESULT—POOR REPUTATION.

POOR REPUTATION—POOR BUSINESS.

Wm. B. Thompson was a member of the American Pharmaceutical Association since 1856. He was associated with the Charity Hospital of Philadelphia as its Secretary and Treasurer for a period of twenty-six years and Treasurer of the old Philadelphia Trade Association of Retail Druggists until it was superseded by the National Association.

In 1860 Mr. Thompson married Elizabeth Chapin, daughter of William Chapin, who was so well known in this community as the Principal of the Pennsylvania Institution for the Instruction of the Blind, which he filled for over a generation. Mr. Thompson's wife, a daughter, and a son, William Chapin Thompson, survive him. On the evening of his end he appeared in usual health after the day's service, enjoying his family group (for his tastes were very domestic), and retiring at the customary hour, soon after passed away almost without a sign—a blessed way for the individual, but a shock to us, the survivors.

CORRESPONDENCE.

Call for Meeting of the National Association of Boards of Pharmacy.

At the last meeting of our Association at Indianapolis, it was agreed that if possible we should hold a meeting prior to the meeting of the American Pharmaceutical Association, in order that our work might not interfere with the regular sessions of the American Pharmaceutical Association, thus giving our members an opportunity to participate in and enjoy the work of our mother Association.

It is therefore ordered by the Executive Committee that a meeting be called for Saturday, August 31st, at 10 o'clock A.M., at the New Astor Hotel, New York, and we earnestly urge that every

Board of Pharmacy in the United States arrange to have a representative present at this meeting.

Matters of vital importance in connection with Pure Food and Drug Legislation, uniformity of Pharmacy laws, educational requirements and national legislation will be considered.

Delegates from all Boards of Pharmacy will be permitted to take part in the discussions whether they are members of the Association or not. Papers or addresses upon any subject pertaining to the objects of the Association are solicited.

Communications may be addressed to the Chairman of the Executive Committee, or the Secretary.

F. B. LILLIE,
July 15, 1907. *Chairman Executive Committee.*

AMERICAN PHARMACEUTICAL ASSOCIATION.

PROCTER MONUMENT.

As the time approaches for the next annual meeting of the American Pharmaceutical Association it seems desirable to record the progress thus far made in the work of the Procter Monument Committee. In order that the Committee may make a full report at the meeting in September, it is highly desirable that the committees of the various State associations send the funds collected to the Treasurer, Benjamin T. Fairchild, Washington and Laight Streets, New York City, and report the names of subscribers, together with the amount of each subscription, also stating whether the subscriptions are paid or unpaid, to the Secretary, Henry Kraemer, 145 North Tenth Street, Philadelphia.

Up to date the secretary has received subscriptions and reports from the following States and countries:

ENGLAND.

A subscription of $25 was received through Henry Kraemer from Professor John Attfield, of Watford, England, which has been handed to the Treasurer, Mr. Fairchild.

KANSAS.

J. P. Redmond, Kansas City, Mo.	$ 5 00
William McPike, " " "	10 00

These subscriptions were received through Professor Sayre, and the amount has been turned over to Mr. Fairchild.

MINNESOTA.

At the solicitation of Professor Wulling, the Minnesota State Pharmaceutical Association voted $100, and this amount was paid to Mr. Fairchild in November last.

NEW YORK.

Mr. William Muir, Chairman of the Committee on Procter Memorial Fund, of the New York State Pharmaceutical Association, furnished the following report:

New York State Pharmaceutical Association	$50 00
C. G. Bruckman	1 00
M. C. Condello	1 00
Dr. Fred P. Tuthill	1 00
Oscar Kleine	1 00
F. E. Kalkbrenner	1 00
Dr. A. D. Linderman	1 00
Dr. Peter W. Ray	1 00
Adrian Paradis	1 00
Nils G. Kant	5 00
John G. Wischerth	2 50
Gustavus Balser	10 00
Dr. Thomas F. Raymow	1 00
J. T. Tengelsen	2 00
Thomas J. Keenan	1 00
Dr. Willis G. Gregory	1 00
Dr. G. C. Diekman	1 00
E. R. Squibb	50 00
Richard Hudnut	2 00
Warren L. Bradt	1 00
Byron M. Hyde	1 00
S. A. Grove	1 00
J. C. Krieger	2 00
Joseph Kahn	1 00
German Apothecaries' Association (New York)	25 00
A. E. Dall & Co.	2 00
Carl Mittinzweig	1 00
Dr. W. H. Weygandt	1 00
Rochester Pharmacal Association	10 00
Kings County Pharmaceutical Society	25 00
H. Benatar	1 00
Dr. W. C. Anderson	$2 00
Jacob Lauffer	1 00
Charles Heimerzheim	1 00
J. H. Rehfuss	2 00
William Bussenschutt	1 00
Dr. A. E. Hegeman	1 00
Charles L. Gessell	1 00
L. C. Bossardet	1 00
E. J. Kennedy	1 00
Dr. A. P. Lohness	1 00
George Kleinau	1 00
Julius Kalish	10 00
F. B. Hayes	1 00
Dr. Joseph Weinstein	1 00
Daggett & Ramsdell	5 00
James L. Dykes	1 00
Thomas Stoddart	10 00
Judson B. Todd	1 00
Charles B. Sears	1 00
John Hurley	2 00
George Reimann	1 00
Dr. H. W. Schimpf	2 00
O. T. Larkin	1 00
Fred Menges	2 00
Henry B. Lentz	1 00
William H. Rogers	2 00
V. L. Cole	1 00
Clarence O. Bigelow	5 00
H. B. Guilford	5 00
T. B. McKane	2 00
Lehn & Fink	10 00
J. B. Sackett	5 00
Manhattan Pharmaceutical Society	25 00
Dr. H. H. Rusby	5 00

Charles L. Gesell	$1 00
George Hahn	5 00
Oscar Riedstrom	2 00
Jacob Diner	2 00
Dr. A. B. Huested	1 00
Otto Wiche	1 00
C. L. McBride	5 00
Benj. Rosenberg	5 00
Oscar Kleine	1 00
H. H. Blomerer	1 00
F. A. Russell	2 00
George Kleiman	2 00
Isaiah Lewin	$1 00
W. T. Cregan	5 00
Total	$358 50
Expenses for postage, circulars, stationery, etc.	43 30
Balance	$315 20

This balance has also been handed to Mr. Fairchild through Frank Richardson, Treasurer of the N. Y. State Pharmaceutical Association.

PENNSYLVANIA.

Mr. William McIntyre, of Philadelphia, has received the following subscriptions, and has sent the total amount to Mr. Fairchild:

Henry J. Siegfried	$10 00
George W. Roland	2 00
L. L. Walton	5 00
Mrs Horace Lee	1 00
D. J. Thomas	10 00
William McIntyre	10 00
Franklin M. Apple	5 00
Charles T. George	10 00
Miss M. A. Moffet	$1 00
W. J. Stoner	1 00
Richard H. Lackey	5 00
Jacob A. Miller	5 00
Edwin M. Boring	5 00
Total	$70 00

Henry Kraemer has received the following paid subscriptions and the balance of $188.63, after deduction of expenses amounting to $42.87, has been handed to the Treasurer, Mr. Fairchild:

Henry Kraemer	$10 00
Florence Yaple	5 00
Lorne E. Hastings	2 00
J. C. Peacock	5 00
Ambrose Hunsberger	5 00
William J. Miller	3 00
O. W Osterlund	5 00
Adolph W. Miller	15 00
James T. Shinn	10 00
William M. Morrison	5 00
E. F. W. Garber	3 00
Charles B. Fricke	3 00
C. W. Hancock	10 00
Samuel P. Sadtler	10 00
J. B. Moore	25 00
Edwin L. Newcomb	5 00
J. H. Stein	5 00
Henry P. Thorne	5 00
J. Warren Worthington	2 00
Edward H. Hance	10 00
M. I. Wilbert	5 00
Harry Matusow	$2 00
Richard M. Shoemaker	15 00
S. E. R. Hassinger	5 00
Frank X. Moerk	10 00
F. F. Muller	2 50
Frank E. Morgan	10 00
William O. Frailey	1 00
John F. Patton	5 00
John K. Garland	1 00
David Horn	5 00
George A. Gorgas	5 00
C. A. Weidemann	5 00
Louis Emanuel	5 00
J. M. Graves	2 00
William H. Smith & Co.	5 00
H. E. Peters	5 00
Total	$231 50
Expenses for postage, circulars, etc.	42 87
Balance	$188 63

MISCELLANEOUS.

In addition to the foregoing, Mr. Fairchild has received from Dr. John F. Hancock, $222.50, being payment from the following:

Collected by C. S. N. Hallberg	$187 50
Tennessee Pharmaceutical Association, J. A. Lloyd, Treasurer	$10 00
Prof. John Uri Lloyd	25 00

PLEDGED SUBSCRIPTIONS.

The following is a list of the pledged subscriptions received by Henry Kraemer:

Joseph P. Remington	$100 00
William R. Warner, Jr.	50 00
M. N. Kline	25 00
Frederic E. Niece	5 00
W. L. Cliffe	10 00
Henry C. Blair	5 00
Joseph A. Heintzelman	10 00
Evan T. Ellis	10 00
Smith, Kline & French Co.	$50 00
Joseph L. Lemberger	10 00
Clement B. Lowe	10 00
William E. Lee	5 00
Charles E. Vanderkleed	2 00
L. E. Sayre	2 00
Total	$294 00

Through Prof. Joseph P. Remington the late John Wyeth, his brother, Frank, and the firm of John Wyeth & Brother, pledged $2,000 to the fund.

The paid and pledged subscriptions to the Procter Monument Fund which have thus far come to the notice of the secretary amount to $3,230.33.

HENRY KRAEMER, *Secretary.*

BOOK REVIEWS.

SOLUBILITIES OF INORGANIC AND ORGANIC SUBSTANCES. A handbook of the most reliable quantitative solubility determinations. Recalculated and compiled by Atherton Seidell. New York: D. Van Nostrand Co. 1907. $3.00, net.

This work of Dr. Seidell's is one of the most important reference books that has been recently published. It contains data relating to the solubilities of more than a thousand substances. These are given for different temperatures and under varying conditions. In addition to this information, the weight of 1 c.c. of solutions at different temperatures and specific gravities are given. The author gives the references to the original literature, and he has attempted to unify the work of different investigators and to bring it all down to a working basis.

It is an invaluable work, not only for chemists and analysts, but for physiologists, pharmacists and all who handle chemicals in a practical way.

COMMERCIAL ORGANIC ANALYSIS. By Alfred H. Allen. Third edition, rewritten and revised. Volume II, Part III. Revised by the author and A. R. Tankard. Philadelphia: P. Blakiston's Son & Co. 1907. $5.00, net.

This part of this valuable work is devoted to the consideration of acid derivatives of phenols, aromatic acids, resins, and essential oils. The matter included is in large part new, the following subjects being treated: sulphonated phenols and their allies; benzoic acid and its derivatives; cinnamic acid and its derivatives; salicylic acid and its allies; dihydroxy-benzoic acid and its allies; gallic acid and its allies; phthalic acids; chemical composition of resins; general characters of resins; resins; oleoresins or turpentines; gum-resins; extraction, classification, general characters, analysis, constituents and hydrocarbons of essential oils; caoutchouc and gutta-percha; olefinic terpene alcohols and aldehydes of essential oils; cyclic terpene alcohols of essential oils; phenols and phenolic esters of essential oils; ketones of essential oils; sulphuretted constituents of essential oils; special characters of individual essential oils; terpeneless essential oils and table of all the better-known essential oils.

While this volume represents largely the work of the author, the late Dr. Allen, the unfinished work has been completed by Mr. Tankard, with the assistance in certain parts, of Dr. Leffmann. The work continues to be a most important handbook for the analysis of the substances discussed, and this volume in particular is indispensable to the pharmacist as well as analytical chemist.

FOODS AND THEIR ADULTERATION. Origin, manufacture, and composition of food products; description of common adulterations, food standards, and national food laws and regulations. By Harvey W. Wiley. With eleven colored plates and eighty-six other illustrations. Philadelphia: P. Blakiston's Son & Co. 1907.

Dr. Wiley, who is well known as the Chief of the Bureau of

Chemistry of the United States Department of Agriculture, says in part in the preface: "This manual is descriptive in character and aims to give, within its scope, as thoroughly and intelligibly as possible, an account of the various food-products in common use in their natural and manufactured conditions, with the usual adulterations which have been found therein. It includes information regarding Methods of Preparation and Manufacture, Food Values, Standards of Purity, Regulations for Inspection, Simple Tests for Adulterations, Effects of Storage, and similar matters pertaining to the subject. It has been designed to interest the consumer, as well as the manufacturer, the scientific as well as the general reader, all of whom it is hoped will find in it something useful. The consumer is entitled to know the nature of the product offered, the manufacturer and dealer the best methods of preparation. It will give the physician and sanitarian knowledge of the value of foods, their proper use and inspection, and, while not analytical in purpose, will provide the chemist with information which will guide him in his work of detecting impurities."

Dr. Wiley has rendered a service to consumers, manufacturers and sanitarians alike in bringing together in this volume so much of the information which is more or less scattered that relates to foods and their adulterations. It is not only more or less valuable to the scientist, but the general reader in particular will find the book one which is easily understood and of considerable value. Pharmacists would do well to have a book of this kind in their reference libraries

STUDIES IN PLANT AND ORGANIC CHEMISTRY, AND LITERARY PAPERS. By Helen Abbott Michael (Helen C. De S. Abbott), with biographical sketch. The Riverside Press, Cambridge, Mass., 1907.

As a girl and young woman, Helen C. De Silver Abbott belonged to Philadelphia, but as she advanced intellectually and as her vision broadened, it was but natural, one almost feels inclined to say, that even though she had not married Professor Michael, she should finally take up her residence in Boston, for whatever else we may say of the "Hub," it is acknowledged that it has a mental atmosphere peculiarly its own.

She died in that city the latter part of 1904, and shortly afterward a brief biographical sketch of her, together with a list of her scientific and literary papers, was published in this JOURNAL (Vol. 77,

p. 460, 1905). These papers have been collected into one volume by her brother, Francis R. Abbott, who with singular good taste has left the estimate of his sister's work to others without one word from him.

The accompanying biographical sketch was written by Nathan Haskell Dole, who also, while speaking of "her lovely nature, her admirable character, her astounding ability, and her epoch-making work," makes use of her own materials to construct his narrative. He compares her to Maria Mitchell, and says that she did for chemistry what Professor Mitchell did for astronomy. The materials drawn upon are in part an autobiography entitled "A Brief Outline of Ten Years of Scientific Life," certain "Scientific Notes" and the notes which she made on a "scientific pilgrimage" to Europe in the summer of 1887. On this trip she met a very large number of the most distinguished botanists and chemists in England and on the Continent, including such botanists as Pringsheim, Pfeffer, Schwendener and Kny, and such chemists as Bunsen, Crookes and Kekulé. By the chemists she was welcomed as a chemist, and by the botanists as a botanist; and she records that Professor Pringsheim showed her a list of all the botanists of the world, in which he had included her name.

The "Studies in Plant and Organic Chemistry" are accompanied by an introduction written by Dr. H. W. Wiley, who says: "She was among the very first investigators of this country who began in a systematic way to study the relations of chemical composition to species of plants and to plant growth." The relation of plant constituents to plant form and plant evolution was a central idea with Dr. Michael, and she wrote three papers bearing on this subject. The titles of these papers are as follows: "Certain Chemical Constituents of Plants considered in Relation to their Morphology and Evolution," "The Chemical Basis of Plant Forms," and "Comparative Chemistry of Higher and Lower Plants." Doubtless such a relation exists, but the problem seems a difficult one, particularly in view of the fact that only now are chemists beginning to formulate laws governing the relation between molecular structure and crystal forms.

Upon her literary work we need not comment here other than to say that she contributed to both prose and poetry, and that again we have evidence of the depth and beauty of her nature.

F. Y.

PHILADELPHIA COLLEGE OF PHARMACY.

The quarterly meeting of the members of the Philadelphia College of Pharmacy was held June 24, 1907. The president, Howard B. French, presided. Eleven members were present. The minutes of the semi-annual meeting, held March 25th, were read and approved. The minutes of the Board of Trustees for March 5th, April 2d, and May 7th and 10th were read by the Registrar, J. S. Beetem, and approved.

The report of the delegates to the Pennsylvania Pharmaceutical Association at its recent meeting at Bedford Springs was presented by the chairman, M. N. Kline. A large number of papers was presented—thirty-four—the largest number ever offered at any of the State meetings. This was due to the efficient work of Professor Charles H. LaWall, chairman of the Committee on Papers and Queries. These papers covered a variety of subjects, all of greater or less interest to pharmacists; a large number were devoted to the consideration of the question of what retail druggists could do to induce physicians to prescribe U.S.P. and N.F. preparations, rather than the preparations of pharmaceutical manufacturers. In the report of the Committee on Trade Interests were several recommendations of importance, including one favoring the organization of co-operative buying by the retail druggists.

The next meeting of the Association will be held at Paxinosa Inn, Easton.

Dr. J. A. Miller, secretary, and J. L. Lemberger, treasurer, were re-elected for the thirtieth time. Dr. Lowe supplemented the report by saying that the Association was welcomed to Bedford Springs by the Burgess. The Committee on Adulterations presented a valuable report. They laid stress on the difficulty of securing pure drugs through the importers, as many of them would not meet the requirements of the U.S.P. Belladonna was cited as a notable instance. The social entertainments were, as usual, very good; one given by the hotel management deserving special mention. A more extended report is published in the AMERICAN JOURNAL OF PHARMACY, pages 332 and 367.

The report of the Historical Committee was read by the chairman, George M. Beringer. Quite a large number of the graduates of the College had failed to reply to the queries sent out referring to their personal careers.

The Pennsylvania State Museum at Harrisburg has requested that the College prepare for its Division of Education a permanent historical exhibition illustrating the history and course of study of the institution. The committee therefore recommend that an exhibit of photographs and a volume setting forth the history of the College be prepared for the State Museum, and a duplicate copy for the College.

The recommendation was approved and an appropriation of two hundred dollars was made to cover the expense of the same.

The Committee on Necrology reported that during the year one active and one associate member had died. Brief memorials of these two members, Joseph D. Marshall and J. W. P. Outerbridge, were read. The chairman presented biographical sketches of several honorary members who had died during the year, which were referred to the Committee on Publication for insertion in the AMERICAN JOURNAL OF PHARMACY.

The Committee on Membership reported the number of active, associate, corresponding and honorary members now connected with the College; also the names of several delinquent members who were liable to suspension. After discussion it was ordered that their names be dropped from the roll of membership.

A number of names were proposed for honorary membership, which were ordered to lay over till the next meeting.

The representatives to the Centennial Celebration of the University of Maryland—Baltimore, May 29th to June 2d—Prof. Joseph P. Remington and Prof. Henry Kraemer, presented a report of that very interesting event. The report by Prof. Kraemer is published in the AMERICAN JOURNAL OF PHARMACY for July, page 341.

An amendment to the by-laws—to make the fiscal year of the College, now ending April 30th, to the end of the College term—was presented by the Board of Trustees and referred to the Committee on By-laws.

Mr. George M. Beringer, in alluding to the recent meeting of the New Jersey Pharmaceutical Association, noted the absence of any delegation from the Philadelphia College of Pharmacy or of the Alumni Association, while the colleges of the neighboring States had all sent delegations. He thought the College should be represented, and hoped that the matter would receive consideration by the next year's meeting.

The president made the following appointments:

Delegates to the American Pharmaceutical Association—Prof. Joseph P. Remington, chairman; Prof. Henry Kraemer, Prof. Samuel P. Sadtler, Prof. C. B. Lowe, M. I. Wilbert; and as alternates, Mahlon N. Kline, E. M. Boring, George M. Beringer, William L. Cliffe, Joseph W. England.

Committee on Necrology—Samuel P. Sadtler, Henry Kraemer, Gustavus Pile.

Historical Committee—George M. Beringer, Thomas S. Wiegand, Henry Kraemer, M. I. Wilbert, Jacob M. Baer, with power to add to their number.

ABSTRACTS FROM THE MINUTES OF THE BOARD OF TRUSTEES.

March 5th. Fourteen members in attendance.

Committee on Property reported they were having plans prepared for the new building for the Pure Food and Drugs Laboratory.

Committee on Library reported a number of accessions to the Library, some by purchase and a number by donation.

Committee on Instruction gave information about the proposed new course, also a roster covering the same. A general discussion followed in reference to the new course.

Committee on Commencement reported that the Academy of Music had been engaged for the evening of May 16th.

Committee on Discipline reported that two students had been caught cheating during the examination, and the Dean was instructed to inform them that they would not be permitted to graduate this term, and must attend another year; the scholarship man to pay for his next year's tuition.

April 2d. Thirteen members in attendance. Mahlon N. Kline was elected chairman of the Board; George M. Beringer, vice-chairman, and J. S. Beetem, registrar. The chairman announced the standing committees for the year.

Committee on Library reported a number of accessions to the Library.

Committee on Appropriations reported the estimated amounts to be allowed for the ensuing year to those committees authorized to make expenditures.

Committee on Instruction made a detailed report in reference to the new laboratory course.

Committee on Property reported that plans for the new building would be ready by the May meeting.

Committee on Examinations reported that the first year final examination was in progress and the second year examinations would be held the following week.

The Dean announced the death of John Wyeth, of the Class of 1854. A committee was appointed to prepare a suitable minute.

A communication was read from the Pennsylvania State Museum, asking that the Philadelphia College of Pharmacy be represented in a permanent exhibit.

Joseph W. Ehman was elected to active membership in the College.

May 7th. Twelve members were present.

Committee on Property reported that necessary repairs had been made. Outline plans for the new building were shown to the members.

Committee on Library reported a number of accessions to the Library. Among them was a copy of "Studies in Plant and Organic Chemistry, and Literary Papers," by Helen Abbott Michael, with a biographical sketch, prepared and presented to the College by Francis R. Abbott (see p. 390).

Committee on Theses reported that they had carefully gone over all the theses presented by the Class of 1907. The treasurer presented his report for the year ending April 30, 1907.

May 10th. Adjourned meeting. Twelve members were present. The Committee on Examinations reported the names of those students who had successfully passed the examinations for the degree of Doctor in Pharmacy, Pharmaceutical Chemist, and for Certificates of Proficiency in Chemistry, whereupon they were balloted for and declared elected and entitled to receive the diploma at the coming commencement. The committee further announced the names of the students receiving prizes.

The chairman then announced the names of members of the Board who had been selected to present them.

C. A. WEIDEMANN, M.D.,
Recording Secretary.

THE READJUSTMENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

M. I. Wilbert in a letter says: The proposal for a readjustment of the American Pharmaceutical Association, as outlined by Mr. Hynson, in this JOURNAL for June, 1907, has much to commend it, and is certainly deserving of careful study on the part of every member of the Association.

It is perhaps needless to reiterate at this time that, if the American Pharmaceutical Association is to continue to progress, and to appeal to any appreciable number of individuals interested in the various branches of pharmacy, the plan of organization and the method of conducting the business of the Association must be materially changed.

The American Pharmaceutical Association should continue to be, as it has been in the past, the one representative organization of the profession, or, perhaps better, the science of pharmacy in America. At no time in the history of our country has there been such an evident need for such an association as just now, and at no time have the prospects for a stronger or a more representative national organization been more in evidence than at the present time, with all of the various factors that are clearing the way for the practice of pharmacy, divested of its numerous more or less objectionable side lines, to divert interest and attention from the main object of our being pharmacists.

To provide for a truly representative organization, I believe that the general plan of organization that has been adopted by the American Medical Association should be borne in mind. For those not familiar with this plan I would suggest that they send and secure a copy of the Constitution and By-Laws of the American Medical Association.

For present conditions, in pharmacy, a more centralized form of organization than that of the American Medical Association should be adopted, with a view of developing the reversed order at some future time.

I would not be in favor of deleting any portion of the present constitution, and the only changes that appear to me to be necessary would be to provide for the creation of a council, or delegate body, to conduct all of the business of the Association, and a Board of Trustees, of, say, six members, to conduct the business in the interim.

The scope of membership should be as broad as possible, and might well remain as at present, with the possible proviso that the Association readopt, and the members be asked to subscribe to, the code of ethics promulgated by the founders of the American Pharmaceutical Association.

NOTES AND NEWS.

THE PACIFIC PHARMACIST is a new monthly drug journal, the first number of which appeared in May. It is the official organ of the California Pharmaceutical Society, and purports to be "an independent journal devoted to scientific pharmacy and the interests of the drug trade." Prof. William M. Searby is editor-in-chief, and associated with him on the editorial staff are Professors J. H. Flint, Albert Schneider and H. B. Carey. The new journal starts out well, and we doubt not that with such a corps of efficient workers it will be able to maintain its purpose.

PROPOSED EXHIBIT OF U.S.P. AND N.F. PREPARATIONS.—At the recent meeting of the Pennsylvania Pharmaceutical Association a committee of seven members was appointed to represent the association at the meeting of the Pennsylvania State Medical Society, and to conduct an exhibit of U.S.P. and N.F. preparations similar to that made at the meeting of the American Medical Association at Atlantic City, by the Philadelphia Branch of the A. Ph. A. An appropriation of $100 was made to defray the expenses of making the exhibit.

SIR WILLIAM HENRY PERKIN, F.R.S., the discoverer of aniline mauve, died at his residence, Sudbury, England, on July 14th, in his seventieth year. He received his early education at the City of London School, and at the age of fifteen entered the Royal College of Chemistry. Professor Hoffmann was one of his teachers, and two years later he became assistant in Hoffmann's Research Laboratory.

It was while thus associated, in 1856, that his great discovery was made. He was working at his father's house during the holiday season, attempting to prepare quinine artificially, and in the course of his experiments obtained the product, afterward called mauve, whereby the coal-tar industry was established. Last year the jubilee of Sir William's discovery was celebrated, both in Europe and America, he, accompanied by Lady Perkin, making the trip to this country to be present at the ceremonies held in New York (AM. JOUR. PH., Vol. 78, pp. 300, 450, 577).

DR. FRANK L. JAMES, the accomplished editor of the pharmaceutical and scientific departments of the *National Druggist*, died in St. Louis, on Sunday evening May 19th, of erysipelas. Dr. James was born August 27, 1841, in Mobile, Alabama. His ancestry was of the New England type on his mother's side, and of English yeomen on the paternal side. He early manifested his exceptional qualities of mind, and we take the following from the *National Druggist* for June: "His facility in the acquirement of languages was little short of marvelous. There is hardly a language that has a literature with which he was not more or less familiar, and most of them he could read and translate with ease."

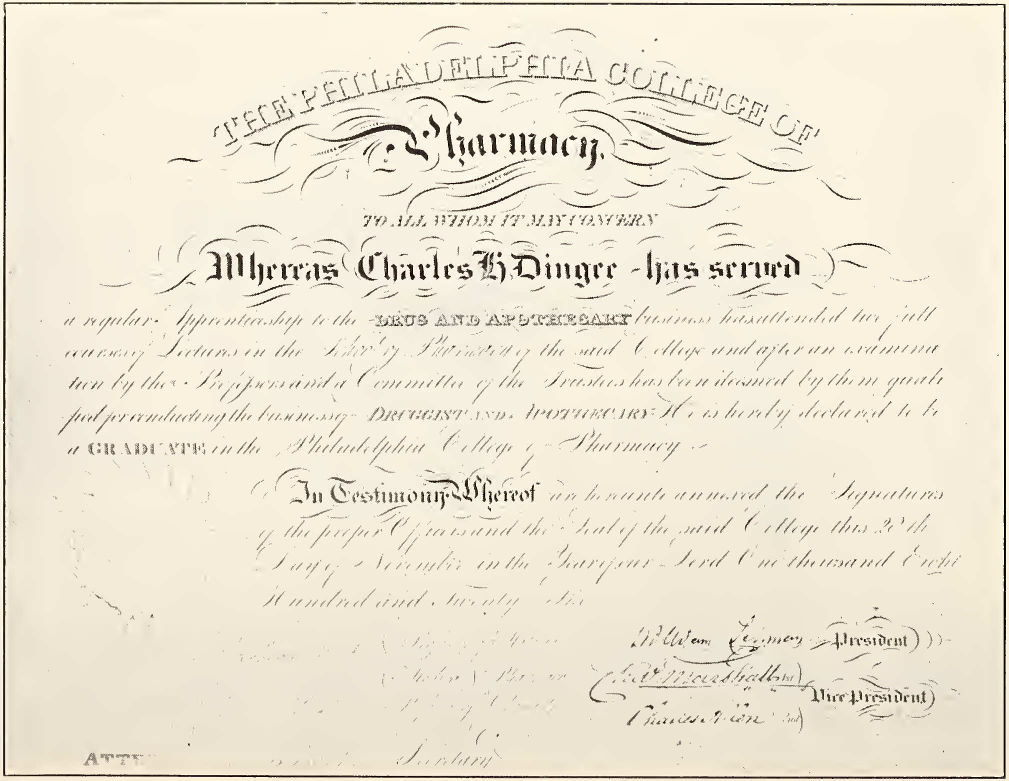
Dr. James received his chemical education in the laboratory of Baron Justus von Liebig, who was his friend as well as teacher. He graduated in medicine in Paris on the eve of the breaking out of the Civil War in the United States, and, coming home, was appointed a member of the Secret Service of the Confederacy by President Davis. Dr. James was at one time president of the American Microscopical Society, and was the author of a book entitled "Elementary Microscopical Technology." He had been connected with the *National Druggist* for eighteen years, and for his place it will be difficult to choose a successor.

DAVID HOOPER, F.L.S., F.I.C., F.C.S., who was Quinologist to the Madras Government for thirteen years, and who is now acting as Curator of the Industrial Section of the Indian Museum, at Calcutta, has this year been chosen Hanbury Medallist.

Mr. Hooper's services as Quinologist, his investigations on the chemical constituents of a large number of Indian drugs, and his share in the preparation of the following works: "Pharmacographia Indica," "Materia Medica of Madras," and "An Introduction to Materia Medica for India," leave no question as to his fitness for the honor which is to be conferred upon him.

JOSEPH HELFMAN, editor of the *Bulletin of Pharmacy* for the past thirteen and a half years, announced his withdrawal from pharmaceutical journalism in the May number of that journal. Perhaps during the whole course of his editorial career, Mr. Helfman has not given expression to a more significant saying than is contained in the following paragraph taken from his concluding editorial: "Mindful of my own great debt to American pharmacy, I would fain express the deep conviction that its future welfare will be assured only in the degree that it fosters a rising sense of responsibility in its followers. Neither among individuals nor among whole classes of men can success abide unless they invite and seek and court responsibility. The true measure of a man is his readiness to bear it. What lasting success can pharmacists expect if they shirk their accountability to the medical profession and to the sick, if they skulk behind laws and associations and manufacturers?"

Mr. Harry B. Mason, formerly associate editor of the *Bulletin*, now becomes the sole editor. Mr. Mason is a student, a forceful speaker and writer, and possessed of an original turn of mind—all which help to fit him for his responsible duties.



THE PHILADELPHIA COLLEGE OF

Pharmacy,

TO ALL WHOM IT MAY CONCERN

Whereas Charles H. Dinger has served a regular Apprenticeship to the DRUG AND APOTHECARY business has attended two full courses of Lectures in the School of Pharmacy of the said College and after an examination by the Professors and a Committee of the Trustees has been deemed by them qualified for conducting the business of DRUGGIST AND APOTHECARY: He is hereby declared to be a GRADUATE in the Philadelphia College of Pharmacy.

In Testimony Whereof are hereunto annexed the Signatures of the proper Officers and the Seal of the said College this 20th Day of November in the Year of our Lord One thousand Eight Hundred and Twenty Six.

William Lehman President

C. Marshall Jr. Vice President

Charles Ellis 2nd

ATTEST [illegible] Secretary

REPRODUCTION OF THE FIRST DIPLOMA AWARDED BY THE PHILADELPHIA COLLEGE OF PHARMACY.

SEP 3 190
PATENT OFFICE

THE AMERICAN
JOURNAL OF PHARMACY

SEPTEMBER, 1907.

THE BEGINNINGS OF PHARMACY IN AMERICA.

By M. I. Wilbert,
Apothecary at the German Hospital, Philadelphia, Pa.

Looking back over the three centuries of time that have elapsed since the foundation of the first English settlement in the territory that now constitutes the United States, one cannot fail to be impressed with the far-reaching influences of what might otherwise be regarded as trivial occurrences. In our own occupation, as in others, these happenings may be considered as the stepping-stones that have contributed to the more or less gradual evolution of an important and altogether indispensable part of our present-day existence.

The first settlers in the English Colonies of North America were usually accompanied by men who, if not regularly graduated physicians, made some pretense to having a superior knowledge of the healing art. If we review the meagre records and traditions of the lives, doings and accomplishments of these early pioneers in American medicine, we must be impressed by the fact that many, if not all, of these early medical practitioners occupied honorable and honored positions in their respective colonies and were a credit to themselves and also to the profession they chose to follow.

Owing largely perhaps to the outdoor life and regular habits of the early colonists, the lives of these medical men, from the Gentleman Barber or Chirurgeon of the Jamestown Colony to the highly cultured and erudite Thomas Wynne, who came to the Pennsylvania colony with William Penn in the *Welcome*, were largely devoted to other vocations than that of physician or surgeon. Dr. Oliver Wendell Holmes, in speaking of the early medical men of the

Massachusetts Colony, says that at least six or seven, if not a larger number, of the early physicians were also ministers of the gospel; one was a school-teacher and also a doctor; one practiced medicine and kept a tavern, and at least one of these early medical men of the Massachusetts Colony was a genuine butcher. In other colonies, particularly in Pennsylvania, several of the early physicians occupied public positions in the various departments of the Colonial Government.

The general good health of the early colonists is commented on by a number of the contemporaneous writers. Among others, Gabriel Thomas, in his "Historical Account of the Province and Country of Pennsylvania," published in 1698, says: "Of lawyers and physicians I shall say nothing, because this country is very peaceable and healthy; long may it so continue, and never have occasion for the tongue of the one nor the pen of the other, both equally destructive of men's estates and lives!"

Similar conditions appear to have prevailed in the Massachusetts Colony, for Giles Firmin, an apothecary, and one of the first medical practitioners to teach anatomy in this country, is quoted as having written to Governor Winthrop: "I am strongly sett upon to studye divinitie, my studies else must be lost, for physic is but a meene helpe."

In one particular, however, all of these early practitioners were the same; they invariably dispensed their own medicines, or at most directed the relatives or friends of the patient to prepare such potions from indigenous or cultivated herbs or roots as they thought necessary for the needs or wants of the sick individual.

The apothecary shop, as it existed at a later period in the larger cities of the American Colonies, was usually the dispensary of a more or less progressive or successful medical practitioner who occasionally deigned to enlarge on his otherwise meagre income by the sale of sundry articles, like spices or tea, which at that time were counted among the luxuries of the more settled portions of the country.

The first record we have of the appointment of an apothecary to fill prescriptions other than his own or those of his preceptor, is to be found in the "Account of the Pennsylvania Hospital, from Its Rise to the Beginning of the Fifth Month, called May, 1754," written by Benjamin Franklin, then the clerk or secretary of the Board of

Trustees of the Pennsylvania Hospital. In this little pamphlet we find the following paragraph:

"The practitioners charitably supplied the medicines gratis till December, 1752, when the managers, having procured an assortment of drugs from London, opened an apothecary's shop in the hospital; and it being found necessary, appointed an apothecary to attend and make up the medicines daily, according to the prescriptions, with an allowance of fifteen pounds per annum for his care and trouble, he giving bond, with two sufficient sureties for the faithful performance of his trust."

Jonathan Roberts, who was warmly recommended by Dr. Bond, was appointed as the first apothecary to the hospital, and served the institution faithfully and well until the spring of 1755, when he resigned to accept more remunerative employment.

John Morgan, who was an apprentice of Dr. John Redman, succeeded as the second apothecary at the Pennsylvania Hospital. He was appointed on May 19, 1755, and served until the following spring, when he resigned to go abroad to complete his medical education.

It was this same John Morgan who, ten years later, was the first to introduce the Continental practice of writing prescriptions, or as he called it in his "Discourse upon the Institution of Medical Schools in America," "the regular mode of practicing physic." In this same discourse, which was held as an introductory lecture to the institution of a medical school in connection with the College of Philadelphia, Dr. Morgan recommended the complete separation of pharmacy and surgery from the practice of medicine, and said: "We must regret that the very different employment of physician, surgeon and apothecary should be promiscuously followed by any one man; they certainly require different talents."

His prime object in advising the separation of the several branches of medical practice appears to have been to improve the whole profession by having each department successfully cultivated. He said: "Let each cultivate his respective branch apart, the physician, surgeon, apothecary, etc.; the knowledge of medicine will be then daily improved, and it may be practiced with greater accuracy and skill."

To the objections that were raised against this new idea, Morgan made the following reply: "Practitioners in general business never do, or can do, the business of an apothecary in this place themselves. They have apprentices for the purpose. After visiting the sick, do not their apprentices make up their prescriptions? I should ask, is not an apothecary thoroughly acquainted with the art of compounding and making up medicines as skilful in it as an apprentice? Is not a man educated in the profession to be trusted in preference to one who is only learning the business?"

Dr. Morgan, on his return from Europe, was accompanied by Mr. Leighton, an accomplished apothecary, who had been educated in Great Britain, and who brought with him a large assortment of medicines, largely from Sylvanus and Timothy Bevan, in London, and was, therefore, prepared to fill all prescriptions that should be presented. Of how long this first prescription pharmacy existed or of how the innovation was received by the apothecaries and druggists of Philadelphia, we have no record, as no mention is made of Mr. Leighton by the annalists of the times, and his name does not appear in the known lists of apothecaries or of medical practitioners. It is probable, therefore, that he did not continue long in business, particularly as other Philadelphia physicians did not take kindly to Dr. Morgan's practice of writing prescriptions, despite the fact that he soon had the best and most remunerative practice in the city.

At the close of the American Revolution there were but three medical practitioners in Philadelphia, who confined their practice entirely to the writing of prescriptions, John Morgan, Abraham Chovet and John Jones.

There are no authentic records that, during the Revolutionary War or during the War of 1812, the dispensing of such medicines as were available was done by others than the surgeons or surgeons' mates directly in charge of the patients. While it is true that a number of apothecaries are mentioned in the several published lists of the medical men that served in the Continental Army, it would appear from the following extract from the Journal of Congress, dated July 27, 1775, that they were engaged in the capacity of general practitioners rather than pharmacists:

"It is recommended that for the establishment of an hospital for an army consisting of 20,000 men the following officers and other attendants be appointed, with the following allowance or pay, viz.: One director-general and chief physician, his pay, per day, four dollars. Four surgeons, each ditto, one and one-third of a dollar.

One apothecary, ditto, one and one-third of a dollar. Twenty surgeons' mates, each ditto, two-thirds of a dollar. One clerk, ditto, two-thirds of a dollar. Two storekeepers, each four dollars per month. One nurse to every ten sick, one-fifteenth of a dollar per day, or two dollars per month. Laborers occasionally.

"The duties of the above officers: The director-general to furnish medicines, bedding and all other necessaries, to pay for the same, superintend the whole, and make his report to, and receive orders from, the commander-in-chief.

"Surgeons, apothecary and mates to visit and attend the sick, and mates to obey the orders of the physicians, surgeons and apothecary."

The general regulations embodied in the above recommendations were more or less closely followed throughout the whole of the Revolutionary War. The pay of the several officers it appears was gradually increased to compensate in a measure probably for the gradual depreciation of Continental currency.

That this was the general practice is evidenced by the first pharmacopœia, or formulary, published in the United States. Dr. William Brown, the author of this first pharmacopœia, was, in 1778, the director of the Continental Army Hospital at Lititz, in Lancaster County, Pa. Of the personality and life of this author but little is known; he was probably born in Scotland. His academical as well as professional education was received at the University of Edinburgh, where he received the degree of M.D. in 1770. He is said to have practiced his profession in Alexandria, Va., and to have been intimately acquainted with Washington, Jefferson, Madison and other leading men of the day. He served as regimental surgeon during the early years of the Revolutionary War and was elected, on February 7, 1778, to be physician-general of the middle department, in place of Dr. Rush, resigned.

As noted above, it was while he was in charge of the general hospital at Lititz, Lancaster County, Pa., that he wrote and published the first edition of the "Pharmacopœia for the use of the Military Hospital." A second edition of this now extremely rare pamphlet was printed in 1781, and it is this edition that was reproduced in the AMERICAN JOURNAL OF PHARMACY for September, 1884.

To meet the requirements of the medical service in supplying and distributing medicines and hospital stores to the army, Congress, in

August, 1776, appointed Dr. William Smith, of Philadelphia, as "Druggist to the Continental Army," for which he was to receive thirty dollars per month.

This latter position appears to have been somewhat the equivalent to that of apothecary-general during the War of 1812, but was in no sense to be construed as being the equivalent of a dispensing pharmacist.

At the beginning of the nineteenth century the want of some authoritative work, or reference book, on the materia medica in common use in the United States, began to be sorely felt by the medical practitioners and druggists in various parts of the country. The Pharmacopœia for the use of the Military Hospital, noted above, was little more than a limited formulary for the use of the surgeons, apothecary and surgeons' mates connected with the hospital at the time. That it must have met with some circulation and use is evidenced from the fact that a second edition of it was required within three years.

Recognizing the desirability of having such an authoritative work, the Philadelphia College of Physicians, in 1788, appointed a committee consisting of eight members to consider the feasibility of forming a pharmacopœia for the use of the College and its members. This committee, after considering the matter, did not think it advisable to publish a pharmacopœia for local use, but proposed that a circular letter be addressed "to the most respectable medical characters in the United States," with the object of obtaining their co-operation and support, for the formation of a National Pharmacopœia.

The circular letter was printed and forwarded in accordance with a resolution adopted April 7, 1789. In answer to this circular letter some correspondence was had with medical men in various sections of the United States, bearing on the proposed National Pharmacopœia, adapted to the state of medicine in America. From the account of the correspondence, as published in the history of the College of Physicians, it would appear that some progress was made in formulating a pharmacopœia ; at all events the committee was continued from time to time, but as months ran into years interest in the project appeared to wane and the subject was ultimately dropped, for the time being at least.

The first to supply the growing demand for a distinctively American book of reference on the materia medica, was Dr. John Redman Coxe, at one time Professor of Chemistry in the University of Pennsylvania.

Dr. Coxe was born in Trenton, N. J., in 1773. He was a pupil of Dr. Benjamin Rush and a graduate from the Medical Department of the University of Pennsylvania, class of 1794. Dr. Coxe was elected Professor of Chemistry in 1809, and in 1818 was transferred to the Chair of Materia Medica and Pharmacy, in which capacity he served until 1835, when he retired at the age of sixty-two. He died in 1864, having passed his ninety-first year.

He was the author of a number of books, of which the best known and, at the time at least, the most popular, was the American Dispensatory, which was first published in 1806, and passed through nine successive editions, the last in 1831.

Although this book was admittedly but a modification of Duncan's Edinburgh Dispensatory, it had sufficient original matter to appeal to American practitioners and met with a ready sale and quite extended use.

The first pharmacopœia proper was that prepared by the Massachusetts Medical Society, and published in 1808.

Although this book was liberally commended for its style and general accuracy, it did not meet with any appreciable amount of success. This was probably due to the fact that it was considered to be local in character and to have been published by a medical society for the exclusive use of its own members. The same may be said of the Pharmacopœia of the New York Hospital, published in 1816.

The American New Dispensatory, by Dr. James Thacher, was published in 1810 and appeared in four successive editions, the last in 1821. This book contained a considerable amount of original matter relating to American drugs and American practices.

The first edition of this dispensatory was, by permission, based on the Pharmacopœia of the Massachusetts State Medical Society, while the last edition included much if not all of the material contained in the then newly issued Pharmacopœia of the United States.

Dr. James Thacher, the author of this New Dispensatory, is probably more frequently quoted than any other of the early writers of books relating to American medicine. He was born at Barnstable, Mass., in 1754, and died in May, 1844, in the ninety-first year of his age. About 1817 Dr. Lyman Spalding proposed a plan for forming a National Pharmacopœia to the Medical Society of the State of New York. This plan proved to be practicable, and as a direct result of this series of efforts the first Pharmacopœia of the United States was published by a committee appointed for this purpose, in Boston, in 1820. Much of the credit for the successful inauguration of this work belongs to Dr. Spalding, who was one of the delegates to the National Medical Convention and the chairman of the Publication Committee.

The medical schools in different sections of the country early recognized the necessity of including instruction in pharmacy in their regular curriculum, and a number of them included pharmacy in the titles of one of their professors. About 1820 no less than six of the twenty medical schools enumerated by Thacher in his History of Medicine in America, included more or less extensive instruction in pharmacy. The chair of pharmacy was usually combined with that of chemistry or materia medica, although in one instance it was combined with obstetrics.

The first school in America to include pharmacy in the title of one of its professors was the then newly reorganized Medical Department of the College of Philadelphia, where Dr. Samuel Powell Griffitts was elected professor of materia medica and pharmacy in 1789. On the fusion of the College with the University of the State of Pennsylvania to form the still existing University of Pennsylvania, Dr. Griffitts was continued as professor of materia medica and pharmacy until he resigned in 1796.

The first recorded attempt to teach pharmacy to others than regularly matriculated students in medical schools was made in the city of Philadelphia, in 1816, by Dr. James Mease, a well-known medical practitioner and author. According to "The History of the Medical Department of the University of Pennsylvania," by Dr. Joseph Carson, Dr. James Mease applied for and was granted permission to hold the introductory lecture to his course on pharmacy in the college buildings. This is said by Carson to have been the first attempt to improve the condition of pharmacy in America, by any attempt at systematic instruction, public or private.

Singularly enough, these meagre references to the minutes of the Board of Trustees of the University of Pennsylvania are practically the only information available at the present time on the subject.

A careful review of the minute book itself does not give any further information than the bare record that such application had been received and that the request had been granted. Where, when and to whom the lectures were given, remains a mystery to be solved at some future date. It is probable, however, that the lectures were continued after 1817, as in the fourth edition of the American New Dispensatory, published in 1821, there is a letter signed James Mease, Lecturer on Pharmacy, dated 1818.

Of Dr. Mease himself comparatively little is known, apart from the fact that he was the author or editor of a number of books and pamphlets, mostly relating to local history or to agriculture, and that he was an active member of a number of societies, among them the Philosophical Society, the Agricultural Society, the Franklin Institute, the Athenæum, and the Horticultural Society.

Dr. Mease is frequently quoted in connection with the last years and the death of Dr. Benjamin Rush, he having attended that eminent person in his last illness.

Dr. James Mease died in Philadelphia, May 15, 1846, in the seventy-fifth year of his age.

In the same year that Dr. Mease appears to have inaugurated his lectures on pharmacy, 1816, Judge Cooper advertised "A Course of Chymical Lectures, to be given in the old Masonick Hall, in Filbert Street, on Tuesday, Wednesday and Friday evenings of each week, at Seven O'clock. Tickets, $15.00 for the course."

In addition to these lectures on pharmacy and chemistry, given outside of the University at that time, students of pharmacy and others could also attend the winter lectures on botany by Dr. Barton; so that, practically at least, the apothecary's apprentice of that period could, if he chose, secure a considerable amount of theoretical information without unduly encroaching on his employer's time. These possible advantages were still further increased, in 1817, by the institution, in the University of Pennsylvania, of a natural science course, consisting of lectures on natural history, botany and chemistry. In this department Judge Thomas Cooper was one of the first professors.

Thomas Cooper was born in England, where he achieved some prominence before coming to this country with Joseph Priestley, in 1794. From 1811 to 1815 he was professor of chemistry in Dickinson College. Desirous of having a wider field for work, he came to Philadelphia, where he instituted the course of "Chymical Lectures" mentioned above. In 1817 he was elected to fill the chair of chemistry in the then newly instituted course on the Natural Sciences. He remained at the University of Pennsylvania for five years, when he resigned to accept a professorship in the University of South Carolina.

Appreciating the evident need for improvement in the pharmacy of that time, the Board of Trustees of the University of Pennsylvania, on the recommendation and at the request of the Medical Faculty, on February 21, 1821, adopted the following resolutions:

> "*Resolved*, (1) That the degree of Master of Pharmacy be, and is hereby instituted, to be conferred hereafter by the Trustees of this University on such persons exercising or intending to exercise the profession of an apothecary as are and shall be duly qualified to receive the same.
>
> "(2) That the faculty of medicine be requested to report to this Board at their next meeting, a proper form of diploma and also a list of such apothecaries in the city and liberties of Philadelphia as are desirous and, in their opinion, deserving of the degree of Master of Pharmacy, and unless subsequent reasons to the contrary shall appear, the degree of Master of Pharmacy shall be conferred on such individuals respectively.
>
> "(3) That every person who shall have served a regular apprenticeship of at least three years with a respectable apothecary or a master of pharmacy, and who shall exercise or intend to exercise the profession of an apothecary, in this State or elsewhere, may, on application to the Board, obtain the degree of Master of Pharmacy. Provided he shall produce a certificate of the faculty of medicine, signed by the dean thereof, of his being qualified to receive the same, which certificate the faculty may grant on the attestation of the professor of chemistry and materia medica and pharmacy, who shall have examined the candidate. He must also produce a certificate of his good moral character.
>
> "(4) That in future it shall be requisite for obtaining such a degree that the candidate shall have attended at least two courses of lectures on chemistry, materia medica and pharmacy in this University."

At the ensuing medical commencement, held on April 5, 1821, sixteen apothecaries of the city and liberties of Philadelphia received the degree of Master of Pharmacy.

The following is a list of the names as they appear in the minutes of the Board of Trustees of the University:

John Hart,
John White,
John Y. Bryant,
Robert Milnor,
Anthony Ecky,
Thos. Cave,
Charles Marshall,
Christopher Marshall,
Mordecai Y. Bryant,
Mordecai L. Gordon,
James D. Rooney,
Charles Treichel,
George F. Garrotson,
John Stitt,
David B. Ayers,
William Poole.

While provisions had been made by the Board of Trustees of the University for instituting a course in pharmacy, the project met with such strenuous opposition from the druggists and apothecaries of Philadelphia that not a single student ever attended the lectures in the Medical Department with a view of securing the degree of Master of Pharmacy. A careful review of the minutes of the Board of Trustees and also of the minutes of the Medical Faculty of the University of Pennsylvania failed to show any record of students in pharmacy, and there is but one other record of the degree of Master of Pharmacy having been awarded. This was at the medical commencement, on April 4, 1823, when the degree of Master of Pharmacy was conferred on Dr. Charles T. Wilstach, a graduate of the Medical Department of the University of Pennsylvania of the class of 1820.

It was on February 23, 1821, two days after the adoption of the resolution instituting the degree of Master of Pharmacy by the University of Pennsylvania that the apothecaries and druggists of the city and liberties met in Carpenters' Hall, to object to the institution of a school of pharmacy in the University, and to organize themselves into a society "for the twofold purpose of providing a system of instruction in pharmacy, and subjecting themselves to regulations in their business." This proposition was subscribed to by sixty-eight of the leading apothecaries of the city and liberties of Philadelphia.

That the Philadelphia apothecaries were deeply in earnest in this new undertaking is evidenced by the fact that they immediately set about to inaugurate their new school.

They secured as their professor of materia medica and pharmacy Dr. Samuel Jackson, a well-known medical practitioner and teacher of Philadelphia, and as professor of chemistry, Dr. Gerard Troost, one of the best-informed and most capable chemists of that time.

The first regular course of instruction in this new school of pharmacy was begun on November 1, 1821, and continued to March 1, 1822.

For several years it was thought that the satisfaction of having attended a course of lectures in the college would itself suffice to bring students, without resorting to the giving of degrees or diplomas, and it was not until January 31, 1826, that the members of the College finally agreed that in future all students who had completed the attendance on two courses of lectures, had passed a satisfactory examination and were able to furnish satisfactory proof that they had been engaged in the business of an apothecary were to be adjudged as graduates in the Philadelphia College of Pharmacy.

On August 23d of this same year, three candidates, Charles Howard Dingee, Charles McCormick and William Sharp, were declared by the Board of Trustees to be graduates of the College, and in the month of November following, these graduates were awarded the signed and sealed diplomas of the College.

From these humble beginnings, dating back to within eight decades of the present time, pharmacy in America has made tremendous strides and has developed into a far-reaching and highly important science and industry.

The science of pharmacy is perhaps best reflected by the now official Pharmacopœia, and also by the eighty or more colleges and schools in which systematic pharmaceutical instruction is being given to upwards of 5,500 students, and from which more than 1,800 candidates are graduated each year.

The importance of the more mercantile or industrial features of pharmacy are perhaps best illustrated by the untold hundreds of manufacturing establishments devoted exclusively to pharmacy or chemistry, representing a huge investment of capital and the annual production of materials worth many millions of dollars.

FLUIDGLYCERATE OF KRAMERIA.[1]

By George M. Beringer.

Some years ago, the writer experimented with a number of the vegetable drugs to determine the possibility of preparing a class of liquid pharmaceutical preparations of the same drug strength as the tinctures, but substituting glycerin and water for the alcoholic menstruum. These experiments were confined to the simple bitter and astringent drugs, such as gentian, taraxacum, quassia, krameria, rhus glabra, and white oak. It was found that if the glycerin was present in the finished glycerole in a proportion of not less than one-third of the volume, the preparations were fairly stable. If only one-fourth or less was present, decomposition invariably took place sooner or later.

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[1] Read at the Annual Meeting of the New Jersey Pharmaceutical Association, Asbury Park, June 13, 1907.

At the suggestion of Dr. A. Haines Lippincott, of Camden, I have recently prepared a liquid preparation of krameria with glycerin as a solvent and of the same drug strength as the official fluid extract, and have named same Fluidglycerate of Krameria.

The term "Fluidglycerate" is used here as a distinct title for a type of what is proposed as a new class of liquid pharmaceutical preparations made with glycerin or mixtures of glycerin and water as solvents, and of the same drug strength as the official fluidextracts, namely, one gramme of the drug to each cubic centimeter of the product, and it is believed that a number of such stable preparations can be made.

The title "fluidglycerate" will likewise serve to distinguish these preparations of a definite and uniform strength from the products of varying proportions now official in the United States Pharmacopœia as "Glycerites," and in the British Pharmacopœia as "Glycerins," and likewise from the host of commercial products sold as "glyceroles."

A number of drugs will yield their active medicinal constituents to glycerin menstruums, and the resulting fluidglycerates, being practically free from resinous matters, will be miscible with water with little or no precipitation.

The following is the formula for Fluidglycerate of Krameria:

Krameria, in number 20 powder	1000 grammes.
Glycerin	500 cubic centimeters.
Water, a sufficient quantity to make 1000 cubic centimeters.	

Mix the glycerin with 2000 cubic centimeters of water, and having moistened the krameria with a portion of this menstruum, pack it in a percolator, pour on enough of the menstruum to saturate the powder and leave a layer of liquid above it and allow it to macerate for twenty-four hours. Then allow the percolation to proceed slowly, pouring on first the remainder of the menstruum and then water until the drug is exhausted. Reserve the first 600 c.c. of percolate and evaporate the remainder to 400 c.c. When cool, add the reserve, and if necessary water, to make the product measure 1000 c.c.

The product is a syrupy liquid of a deep brownish-red color and a strong astringent taste. It is miscible with water, making an almost clear reddish brown liquid with a distinct purplish tint. Dr. Lippincott prescribes the fluidglycerate to be used as a rectal injection, directing two teaspoonfuls to a half or to one cup of water. He reports very gratifying results both in private practice and in hospital experience.

Dr. James P. Tuttle, professor of rectal surgery in the New York Polyclinic Medical School, in a "Treatise on Diseases of the Anus, Rectum and Pelvic Colon," highly recommends in the treatment of chronic catarrhal inflammation of the rectum, a similar preparation under the name of Aqueous Fluidextract of Krameria. In this work he states: "The krameria has given the best results, and generally under its use the condition rapidly improves. This drug as found ordinarily in the shops is absolutely useless."

The formula given for his "Aqueous Fluidextract," while not stated with the exactness of description of manipulation that a pharmacist would use, leaves no doubt that his intent was a preparation identical with my "fluidglycerate" as prepared by the above formula. He states: "This can be mixed freely with water in any proportion and throws down no sediment; it can be introduced into the tenderest rectum without producing irritation; it is an astringent and apparently soothes pain and reduces inflammation. For irrigation it is used in strengths of from 2 to 30 per cent., and for local application it may be used pure."

THE STRUCTURE OF THE STARCH GRAIN.[1]

SECOND PAPER.[2]

BY HENRY KRAEMER.

In a previous paper (1) on the structure of the starch grain, I showed that the peripheral layer of the potato starch grain breaks and recurves on treatment with certain reagents, much like the cutin layer of an epidermal cell on treatment with sulfuric acid. While I had previously observed that this peripheral layer is stained with certain of the aniline dyes, I thought that the effect might probably be due to the remains of plastids or protoplasmic material, rather than to the presence of a distinct membrane. I am now satisfied, however, that it can be demonstrated that the peripheral layer of the starch grain is a distinct membrane.

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[1] Reprinted from the *Botanical Gazette*, Vol. XL, October, 1905.

[2] The first paper was published in this JOURNAL for May, 1907, pp. 217–229.

It is well known that upon the addition of an iodin solution to unaltered starch grains at the ordinary temperature, the grains are colored blue; while the solution or filtrate remains colorless or some shade of yellow, depending upon the amount or strength of iodine solution that has been used. If on the other hand the grains are triturated with sand (one part of starch to five of sand) for a short time previous to the addition of the water, the filtrate will be colored a deep blue upon the addition of an iodin solution. Heretofore it has been supposed by some that the blue coloration was due to the presence of fine particles which went through the filter and were suspended in the filtrate, while in reality there is a true solution of the starch; or in other words the soluble starch has been liberated from the grain by the rupture of the peripheral layer. A polariscopic examination of the starch solutions, after clarification by means of talcum, showed that they have marked dextro-rotatory properties. The angle of rotation for solutions of corn, wheat, maranta, and potato starch ranged from 0·3814 to 0·8770°. Furthermore, a microscopic examination of the triturated starch shows the grains to be in various stages of disintegration, and this, taken together with the behavior of starch toward iodin, as well as the other observations referred to, would indicate that the starch grain consists of a membrane that is insoluble in water at ordinary temperature; and an interior portion which is at least in part soluble in water at ordinary temperature, that is, consists of soluble starch or starch that is colored blue with iodin. This technique enables us to differentiate at once the soluble starch present, which heretofore has not been supposed to exist in the unaltered starch grain. As to whether this substance is identical with the granulose of Nägeli (2) is a problem which remains to be determined. It may be added that this method furnishes a means of separating the constituents in the unaltered grain, and is to be preferred to the methods which have been employed heretofore, of using solutions of ferments or mineral acids, which give rise to altered substances, and hence do not give a true differentiation of the substances as they naturally occur in the starch grain.

This brings us then to consider the views of Raspail (3), in connection with those of others, in regard to the nature of the starch grain, which may be summarized as follows:

1. The starch grain consists of a membrane which is insoluble in water, and a more or less soluble content, as pointed out by Raspail.

2. It develops from a centric or excentric point, to which layer after layer is added, a view first advanced by Fritsche (4), and subsequently enlarged upon by Schimper (5), who demonstrated that its growth is dependent upon the function of the leucoplastids.

3. The content of the grain consists of at least two different substances, as first pointed out by Nägeli (2), and later confirmed by Meyer (6), Schimper (5), and others, who showed in addition that the structure might be compared to that of sphero-crystalloids.

THE ACTION OF IODIN UPON STARCH.

The effect of iodin upon starch has been the subject of considerable investigation and speculation by both botanists and chemists. Mylius (7) held to the view that the blue coloration formed on the addition of iodin to starch is due to the formation of a compound of hydriodic acid and starch. Meineke (8) also contended that hydriodic acid is essential to the formation of the blue color of an iodin-starch solution. Stocks (9), Seyfert (10), and Rouvier (11) are of the opinion, however, that this colored compound does not contain hydriodic acid, the last-named investigator having shown that it may be formed in the presence of alcohol as well as water, and all of them agreeing that a true chemical compound (iodid of starch) is formed.

On the other hand, Küster (12) and Meyer (6) believe that the so-called iodid of starch is not a true chemical compound, but that the iodin and starch are combined in much the same way as the ingredients in an emulsion. This latter view has been more or less sanctioned on account of the statements in the text-books that the iodin is removed from the combination on treatment with carbon disulfid. My observations, however, show that if the starch is in excess of the iodin (1 gramme of potato starch and 10 c.c. of a solution containing 0·1 per cent. of iodin and 0·5 per cent. of potassium iodid), or if the iodin and starch be in such proportion that all of the free iodin is taken up, and the mixture is dried before adding the carbon disulfid, even on allowing it to act for six months, the carbon disulfid is not colored; that is, does not take up the iodin, the same being true of alcohol and chloroform. This result, taken together with the previous experiments in the treatment of starch with sand and then with iodin, would seem to confirm the view that a true chemical compound is produced by iodin and soluble starch, whether in the grain or in solution.

That the amount of soluble starch varies in the starch grains of different origin can be demonstrated by the treatment of definite amounts of the starches with definite quantities of iodin solution. On treating 0·5 gramme of the several commercial starches with 2 c.c. of iodin solution (0·1 per cent. of iodin and 0·5 per cent. of potassium iodid), it will be found that there is a marked difference in the intensity of the color in the grains, those of potato and maranta being colored deep blue, while those of corn and wheat are scarcely at all colored, the mixtures being somewhat of a purplish color. These observations seem to accord with the experiments of Rouvier (13), who found that the different classes of starch took up varying amounts of iodin, and are contrary to the statement by Stocks (9) that the shade of color varies with the amount of iodin but not with the different starches. In other words, the shade and intensity of color not only vary according to the strength of iodin solution, but also according to the kind of starch used.

It is well known that if a starch solution be treated with iodin in the cold, a blue coloration will be the result, and that if this solution be then heated the blue color will disappear, but will return on cooling the solution, though less intensely than before. This peculiar behavior of starch and iodin has never been satisfactorily explained. Nägeli and Schwendener (14) consider that the loss of color on the application of heat is due to the production of hydriodic acid; but this does not explain the reappearance of the color on cooling; and so far as I am aware no one has ever demonstrated the presence of this acid. If this acid were present, then according to Mylius (7) and Meineke (8), the blue color would remain on heating the solution, since they claim, as already pointed out, that the blue color is due to the presence of this acid. It is thus apparent that there is considerable contradiction in the arguments that have been presented on this subject.

The following experiments tend to explain the phenomenon: If we take 0·5 gramme of potato starch and mix it with 50 c.c. of water and heat the mixture in an Erlenmeyer flask of about 100 c.c. capacity on a water bath to a temperature of about 80° C. for one hour, and then add 5 c.c. of iodin solution (iodin 0·1 per cent. and potassium iodid 0·5 per cent.) and place a piece of ordinary filter paper, which usually contains starch, over the top of the flask, and then continue the heating until the solution is decolorized, which takes place at about 80° C., the filter paper will be colored blue, showing that some of the iodin has been volatilized. Furthermore, on cooling the solution, as already pointed out, the blue color begins to return at about 65° C. and increases in intensity until at about 40° C. it reaches the maximum; though it is less intense than the color produced when an iodin solution is added to a starch solution cooled to this temperature. These results may be interpreted as showing that iodin forms a compound with starch which is dissociated on the application of heat; that is, at a temperature between 60 and 80° C., part of the freed iodin is volatilized as such, and the amount remaining in solution depends upon the length of time the heat is applied. Also the loss of iodin in this way accounts for the decrease in color of the starch-iodin solution on cooling.

An attempt was made to remove the free iodin from the hot colorless starch-iodin solution by the addition of chloroform, but it was found difficult to handle the material, as chloroform boils at about 60° C. Subsequent experiments, however, showed that unaltered potato starch grains as well as a solution of potato starch would remove the iodin from a chloroformic solution at the ordinary temperature. These experiments were conducted as follows: 5 c.c. of an iodin solution, of the strength already stated, were shaken in a separatory funnel with 25 c.c. of chloroform, and most of the chloroform containing the iodin separated. To this were added 5 grammes of dried starch. The latter, however, did not take up the iodin from the solution; but on the addition of a small quantity of water (about 10 c.c.) and after shaking the mixture, the starch and iodin combined, and almost all of the iodin in the chloroformic solution may be removed in this way. The addition of 2 c.c. of potassium iodid solution (5 per cent.), even with 0·5 gramme of starch, causes the iodin to be taken up immediately. The starch in a soluble starch solution also combines immediately with the iodin in a chloroformic solution.

In summing up the observations on the behavior of iodin and starch, it seems to me that we are dealing with a chemical compound of iodin and soluble starch; but that the combination is a feeble one, being easily dissociated upon the application of heat, and the iodin being more or less volatilized. Also the facility with which soluble starch takes up the iodin in a chloroformic solution indicates that the affinity of starch for iodin is considerably greater than heretofore supposed.

STAINING OF THE GRAIN.

While I have obtained at times some beautiful results by the use of anilin stains, it has been impossible for me until now to duplicate some of my earlier results. I have succeeded, however, in developing a method in the staining of wheat starch which yields uniformly satisfactory results. It is as follows: to 0·500 gramme of wheat starch add 2 c.c. of an aqueous iodin solution (containing 0·1 per cent. of iodin and 0·5 per cent. of potassium iodid); mix well and allow the mixture to stand from 20 to 30 minutes in a porcelain dish or watch crystal; then add 2 c.c. of a saturated aqueous solution of gentian-violet (1 gramme of gentian-violet to 100 c.c. of water); allow this to stand from 12 to 24 hours, examining the grains from time to time by mounting them in water. When the grains are satisfactorily stained, the mixture is transferred to a filter and the excess of stain is removed as quickly as possible by washing the magma with water. The material is then allowed to dry spontaneously or between pieces of bibulous paper. For examination it is then mounted in Canada balsam, the preparation being permanent for years, as is also the case with the unmounted material.

Corn starch may also be stained by the use of this method, but in the staining of potato and maranta starches it is necessary to use weaker iodin solutions. I have not evolved entirely satisfactory methods, however, for uniformly staining these latter starches.

It may be of interest to state that the foregoing method has certain features which are similar to those of the gentian-violet method used in demonstrating the so-called continuity of protoplasm in the vegetable cell wall (15). In the study of continuity of protoplasm a swelling reagent, such as sulfuric acid, is used and a comparatively short time is consumed in the whole operation; whereas in the method proposed for the staining of wheat starch the water used may be considered a swelling agent acting on the grain during a longer time. The analogy in the results are so striking that students who are interested in the study of the continuity of protoplasm will do well to compare their results on the cell wall with those obtained in the study of the wheat starch grain by the method just described.

The author acknowledges his indebtedness to Miss Florence Yaple for valuable assistance in the preparation of this paper.

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PROGRESS IN PHARMACY.

A QUARTERLY REVIEW OF THE MORE IMPORTANT ADVANCES IN PHARMACY AND MATERIA MEDICA.

By M. I. Wilbert,

Apothecary at the German Hospital, Philadelphia.

The forty-fourth annual meeting of the British Pharmaceutical Conference, in Manchester, during the week of July 22d, constitutes one of the more notable events of the recent past.

From the very complete reports that were published in all of the British pharmaceutical journals, within a few days of the adjournment of the meeting, it would appear that the Conference meeting was unusually well attended and that all present had been fully repaid for their time and trouble. The papers were well up to the usual standard of excellence that has long distinguished the communications read before the Conference. While not epoch-making, a number of these papers contain practical hints that will prove to be of value to the everyday pharmacist.

The following concise abstracts have been adapted from the

British and Colonial Druggist, and will no doubt prove interesting as illustrating the nature and the content of the several papers:

Animal Charcoal.—Dr. Knecht showed that the decolorizing power of animal charcoal was in direct ratio to the nitrogen contained.

Plants and Disease.—Professor Weiss gave an interesting communication dealing with the methods of immunizing plants to certain diseases.

Alkali in the Ash of Drugs.—To determine this, Mr. F. H. Alcock recommends a modification of the lead method described in Fresenius's Manual.

Calamine.—Prof. R. B. Wild described the production of artificial calamine and its uses.

Liquid Extract of Cascara.—Mr. J. H. Franklin recommends a formula which produces a bright, stable liquid extract that is freely miscible with water.

Preservation of Testing Solutions.—Mr. F. H. Alcock recommends the addition of 1 or 2 per cent. of benzene to solutions of albumen and gelatin.

Pharmacy Notes from Various Parts of the World.—Dr. W. H. Martindale contributed a collection of notes dealing with some of the more distinguishing features of the practice of pharmacy in many lands.

False Calumba.—Mr. S. Taylor called attention to a new adulterant of calumba much resembling inferior samples of the genuine drug, from which it differs in the presence of red coloring matter and in the form of the crystals found in the cells.

Chloroforms of Aconite and Belladonna.—Mr. R. Wright calls attention to the advantages of the Codex processes for making these preparations.

Infusion of Quassia.—Mr. Ernest Quant has found that an infusion of quassia prepared with boiling water is less satisfactory than one prepared with cold water and subsequently boiled.

Iodine in Fucus Vesiculosus.—Mr. F. C. J. Bird proposed to demonstrate the presence of iodine in preparations of this drug, by evaporation to dryness, carbonization, acidifying with acetic acid and treating with hydrogen peroxide. The iodine may then be removed by chloroform and identified.

Examination of Chromic Anhydride and its Solutions.—Mr. T. E. Wallis reports work done to determine chromic acid acidimetrically.

Cucumis Trigonus.—Messrs. Naylor and Chappel find that the pulp and rind of the fruit contain a body that is closely allied to, if not identical with, colocynthin.

Bacteriology of Plasters and Protective Tissues.—Mr. G. Pinchbeck has found that plasters with a water-soluble basis are very unsatisfactory from an aseptic point of view. He suggests the use of a rubber basis and gives formulæ.

Officinal Testing.—Mr. J. P. Gilmour records his experience with chemical tests and demonstrates the need for systematic testing, by pharmacists, of articles taken into stock.

Pungent Principles of Ginger.—Messrs. Garnett and Grier have isolated from the phenolic constituents of ginger an oil which they believe to be chiefly unchanged gingerol.

Antimonium Sulphuratum.—Messrs. Howard and Harrison criticise the B. P. tests for this substance and suggest important modifications.

Resinoids.—Mr. D. B. Dott discusses the need for adding extraneous matter to preparations of this kind to overcome their hygroscopic properties.

Brucea Antidysenterica and Brucea Sumatrana.—Drs. F. B. Power and A. H. Salway have examined the fruits of the former and find that the constituents are similar to those contained in the fruit of B. Sumatrana.

An examination of the bark of both plants demonstrated but a comparatively small proportion of the bitter principles.

A New Method for Preparing Saccharated Carbonate of Iron.—Mr. J. H. Franklin suggests a modified formula for this preparation.

Determination of Ferrous Carbonate.—Mr. Philip H. Crewe suggested several modifications in the B. P. assay of saccharated carbonate of iron.

What is Oil of Juniper?—Messrs. Umney and Bennett point out that the oil from the partially dried berries and the oil from the fresh berries differ materially.

Note on Oil of Juniper.—Mr. F. C. J. Bird records his experiments with oil of juniper and suggests that the present B. P. description of this oil be made more definite.

Mr. Robert Wright, F.C.S., was elected president of the British Pharmaceutical Conference for the coming year, and Aberdeen was selected as the place of meeting for 1908.

In our own country the meetings of the State Pharmaceutical Associations, held during the past three months, have been of more than usual interest and were generally well attended.

As might have been expected, matters of economic importance were generally more frequently and more freely discussed than purely scientific subjects. Among the more popular subjects for discussion we find: "Pure Food and Drug Laws," "The Relations Between Physician and Pharmacist," "U.S.P. and N.F. Propaganda" and the "Future of the N.A.R.D."

The latter subject appears to have interested an unusual number of pharmacists, and speculation as to the future policy of this organization appears to be rife on all sides.

There can be no doubt that, judiciously managed, this organization can wield a tremendous influence for good in the future development of pharmacy in this country, and that, on the other hand, the same organization, if dominated by unsound principles, can bring about a deterioration rather than an uplifting of the rank and file in our calling. The coming convention of the N.A.R.D., in Chicago, during the week of September 16th, will be eagerly followed by persons in all branches of pharmacy.

The Future of the N.A.R.D.—Under this title Prof. H. H. Rusby discusses several of the proposed activities of the N.A.R.D., and very properly asserts that the essential object of organization is that the society do for its members that which they cannot accomplish for themselves.

He suggests that the N.A.R.D. endeavor to secure for its members all of the important prescription materials of perfect quality. Such a procedure would practically enable each individual druggist to guarantee the identity and purity of the articles that he supplies on prescriptions. Dr. Rusby believes that the moral effect of such an undertaking would be enormous, and that it would secure for pharmacists a standing in the community that is unknown at the present time. (*Drug. Circ.*, August, 1907, page 550.)

The Future of the U.S.P. is another subject that is receiving considerable attention at the present time.

The Druggists' Circular is collecting and publishing comments and opinions on the future trend in pharmacopœial revision, and many of the leading drug journals have taken cognizance of the discussion in one way or another. While the ideas and opinions thus expressed differ materially, the authors are nevertheless well agreed in asserting that the present Pharmacopœia, with all of its faults and shortcomings, is a credit to American pharmacy, and that strenuous efforts should be made to make the coming edition at least equally, if not more, representative of the best that American pharmacy is capable of.

The letters, editorials and comments that have been published on this subject are well worth careful consideration by all who are at all interested in the Pharmacopœia. There can be no misinterpretation of the signs of the times. Matters pharmaceutical are developing rapidly, and changes that a decade ago would have been thought impossible are all but upon us, and they will, no doubt, bring in their train radical changes in the publication, if not the actual revision, of the National Pharmacopœia.

International Standards.—Of the National Pharmacopœias that have been published since the convening of the International Conference for the Unification of the Formulæ of Potent Medicaments, in Brussels, in 1902, the Spanish Pharmacopœia leads by conforming to 96 per cent. of the requirements. The Belgian Pharmacopœia conforms to 87 per cent., the Dutch Pharmacopœia 81 per cent., the Austrian Pharmacopœia 77 per cent., and the Pharmacopœia of the United States to 27 per cent. of these requirements.

To arrive at these results, Belgium was compelled to modify 80 per cent. of the formulas, Spain 75 per cent., Holland 39 per cent. and Austria but 6 per cent. of the corresponding formulæ contained in the previous editions. (*Schweiz. wochschr. f. Chem. u. Phar.*, 1907, page 419.)

Modern Pharmacopœias and the International Agreement.—Prof. Henry G. Greenish, in discussing the same question (*Phar. Jour.*, June, 1907, page 832), makes the following comment:

"The conspicuous failure on the part of the United States to bring its formulas into harmony with those of the agreement, as shown by the above table, and also the notes on the various preparations, is the more remarkable when considered in conjunction with the statement in the preface (of the U.S.P.) that 'the recommendations of this (the International) Conference have been adopted by the Committee of Revision except in one or two instances.'"

The New Danish Pharmacopœia.—The new edition of the Danish Pharmacopœia is the seventh, the original edition having been published in 1772.

The text of the book is Danish, while the titles appear in Latin.

The number of articles in the text has been materially reduced. The edition published in 1893 included 592 titles, and the present edition, despite a number of additions, includes but 489, a net reduction of more than one hundred.

The text of the Protocol adopted by the Brussels convention, for the unification of formulæ for potent medicaments, has been included entire as an appendix. All of the corresponding formulæ in the body of the book are also specially designated F. i.

In other respects the book is fully brought up to date, and the descriptions, tests and formulas are thoroughly in keeping with modern science. (*Phar. Zeitg.*, 1907, page 531.)

The Japanese Pharmacopœia.—An English translation of the recently issued third edition of the Japanese Pharmacopœia is to be published shortly, and the Japanese Government has postponed the time for the enforcement of the new Pharmacopœia from July 1, 1907, to January 1, 1908. This was done to allow foreign manufacturers ample time to comply with the requirements of the new Pharmacopœia. (*Chem. and Drug.*, July 6, 1907, page 18.)

The British Pharmaceutical Codex.—The Council of the Pharmaceutical Society of Great Britain is about to publish a collection of descriptions and galenical formulæ for non-official preparations in use in the British Empire.

The book is now in press and is expected to comprise upwards of 1,200 octavo pages and contain upwards of 2,500 monographs. The descriptions and formulæ are said to be replete with chemical and pharmacological notes and suggestions as to the best methods of prescribing and dispensing the numerous remedies that are described.

This venture on the part of the Pharmaceutical Society of Great Britain will be followed with interest by pharmacists in all parts of the world, and is particularly deserving of attention by American Pharmacists in connection with the now widespread effort to enlist the interest of physicians in official drugs and open formula preparations.

Physicians' Manual of the Pharmacopœia and the National Formulary.—This is the title of an epitome of all of the articles contained in the now official edition of the Pharmacopœia of the United States and of the National Formulary. This handy little volume has been compiled for the American Medical Association by Prof. C. S. N.

Hallberg and Dr. J. H. Salisbury, both of Chicago. In addition to the titles, definitions and average doses of the official articles, the book contains a number of additional synonyms, numerous suggestions for extemporaneous prescriptions, suggestions on the medicinal uses of the several articles, a list of the official preparations of each drug, short but explicit definitions for the several classes of official preparations, an exhaustive therapeutic index and an index to the synonyms that have been included in the book.

All of this information has been gathered together and virtually compressed into 204 duodecimo pages, thus making a volume that is designed as a pocket companion for the busy practitioner.

The book is published by the press of the American Medical Association, 103 Dearborn Avenue, Chicago, Ill. Single copies may be had, postpaid, for fifty cents, and the publishers will no doubt make a material reduction for quantity lots.

Detection of Sulphonal in Trional and Tetronal.—According to E. Gambutti (*Jour. Pharm. Chem.*, 1907, page 483), sulphonal may be separated from trional or tetronal by taking advantage of its comparative insolubility in ether. 10 c.c. of ether will completely dissolve 0·5 of trional, 1·00 of tetronal and only 0·07 of sulphonal. Sulphonal may subsequently be identified by suitable reagents and the determination of its melting point, 125·5° C. (*Phar. Jour.*, June 15, 1907.)

Espic Cigarettes have been examined by Mai and Schoeffer, who report that these cigarettes weigh about 1 gramme each and contain a mixture of coarsely powdered stems, leaves and seeds in which microscopic examination showed stramonium leaves, hyoscyamus leaves and seeds and belladonna leaves. Neither nicotine nor the alkaloids of opium could be found. (*The Chem. and Drug.*, June 8, 1907, page 877.)

Isopral and Hydrated Chloral.—Dr. Robert A. Hatcher (*Jour. A.M.A.*, June, 1907, page 1849) has made a comparative study of isopral and hydrated chloral and their physiologic action on dogs, cats and rabbits. He concludes that the experiments on rabbits indicate that there is no essential difference between the action of isopral and hydrated chloral in effective doses, on the respiratory centers, and the experiments on dogs show that isopral is more than twice as active in depressing the vasomotor and respiratory centers and the heart.

Hatcher concludes by advising cautious clinicians not to experiment with isopral except in carefully selected cases.

Aspirophen. (See also AM. JOUR. PHARM., 1906, page 579).—Zernik has recently demonstrated that this substance is not a true chemical combination, as claimed by the manufacturers, but is a simple mixture of molecular quantities of free salicylic acid and mono acetyl phenocoll. (*Phar. Post*, 1907, page 410.)

Cinnamylcacodylic Acid.—Crinon states that this substance consists of equal parts of cacodylic acid and cinnamic acid. It occurs as white crystals that are only slightly soluble in water or glycerin, but readily soluble in alcohol. The solution in alcohol is, however, readily decomposed by water. (*Phar. Zentralh.*, 1907, page 192.)

Coryfin is a menthol ester of ethylglycolic acid. It is a colorless and odorless liquid, very slightly soluble in water, and readily soluble in alcohol, ether and chloroform. It is neutral in reaction and leaves no residue on heating. Coryfin is used internally as an intestinal antiseptic and externally as an application for securing the anesthetic and analgesic action of menthol. (*Apothek.. Zeitg.*, 1907, page 494.)

Euscopol is said to be the hydrobromide of scopolamine that is optically inactive and free from foreign alkaloids. It melts at 180 to 181°. (*Chem. and Drug.*, 1907, page 837.)

Formidin.—This is said to be an iodide of methylene disalicylic acid, produced by the condensation of formaldehyde, salicylic acid and iodine. It is recommended for internal use and also as a dusting powder for wounds in place of iodoform.

Zernik, in a recent number of the *Apotheker Zeitung* (1907, page 383), states that quantitative analysis showed that the substance does not conform to the published formula, but contains about 20 per cent. less iodine. Additional tests failed to show the separation of formaldehyde in presence of either acids or alkalies.

Metramin.—This is another recent addition to the already numerous proprietary names for the official hexamethylenamine. (*Phar. Zeitg.*, 1907, page 541.)

Monotol.—This was formerly the ethyl glycollic acid ester of guaiacol, but the manufacturers are now marketing the corresponding methyl ester under the same name, which is a liquid at 0° C. The original compound was a white crystalline mass at 30° C. (*Pharm. Zentralh.*, 1907, page 666.)

Paraxine, dimethyl amino para xanthine, is a new diuretic that is allied in constitution to theobromine and theophylline. It occurs as long fine needles melting at 126°.

Paraxine is but sparingly soluble in cold water, more soluble in alkaline and feebly acid solutions. It has been given in doses of from 0·5 to 4·00 in 24 hours. The administration of this substance is said to be often accompanied by a sensation of weight in the stomach, or nausea in some cases. Nervous troubles and vertigo have also been observed. (*Phar. Jour.*, July, 1907, page 9.)

Silver Acetate.—This preparation is being recommended as a substitute for other silver salts for use in the eye. One of the advantages that are claimed for it is the fact that it is comparatively insoluble in water and that even when exposed it is not possible to have more than 1 or 2 per cent. of the substance in solution. In actual practice it is recommended that the use of the solution in the eye be followed by a rather liberal rinsing with physiologic salt solution. (*Phar. Zentralh.*, 1907, page 319.)

Use of Silver Compounds in Great Britain.—The replies that have been received by the Therapeutic Committee of the British Medical Association, in answer to a widely disseminated inquiry, appear to indicate that only three silver compounds are much used, namely, silver nitrate, argyrol and protargol.

The objection to silver nitrate is the amount of pain that it frequently produces, but it is considered to be uniformly reliable even when employed in dilute solutions.

The reports relating to argyrol and protargol are contradictory in many important particulars, and the only generally expressed advantage that these compounds possess is that they usually cause less pain than silver nitrate. (*Phar. Jour.*, June 29, 1907, page 829.)

Synthetic Suprarenin.—A German firm is said to be marketing a synthetic product that has all of the pharmacologic properties and uses of the active principle of the suprarenal gland. The synthetic product is said to be more uniform in composition than the product obtained from the suprarenal gland, and solutions of the former are said to be more stable. (*Phar. Zeitg.*, 1907, page 467.)

Tannothymol.—Tannin thymol methane is a condensation product of formaldehyde, thymol and tannin, that occurs as a white, tasteless powder melting at 235°. It is insoluble in water, but soluble in alcohol or in solutions of alkalies. Tannothymol is recommended to be used as an astringent in diarrhœa in doses of 0·5 to 4·00. (*Phar. Zeitg.*, 1907, page 534.)

Vesepgrin.—The acetic acid ester of salol occurs as white crystals that melt at 97°. The substance has been recommended as an antirheumatic and urinary disinfectant. (*Chem. and Drug.*, June, 1907, page 869.)

Solution of Ferrous Carbonate.—The *Druggists' Circular* has recently (June, 1907, page 412) republished a formula suggested by A. Kal (*Pharm. Weekbl.*) for a solution of ferrous carbonate.

Modified to make it more available for American pharmacists, it would be as follows:

Iron lactate (powdered)	25
Potassium and sodium tartrate	28
Potassium carbonate	13
Citric acid	1
Cinnamon water	500
Distilled water, to make	1000

Dissolve the potassium and sodium tartrate and the potassium carbonate in about 50 c.c. of distilled water, add the iron lactate and stir until dissolved. Then add the remaining portions of water and finally the citric acid. The resulting solution is a clear, dark green liquid that contains approximately 1 per cent. of ferrous carbonate in solution.

PROPRIETARY PREPARATIONS APPROVED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION.

(*Continued from page 122.*)

EUGALLOL.

A solution consisting of two parts of monoacetylpyrogallol, $C_6H_3(OH)_2(CH_3COO)$, and one part of acetone.

Actions and Uses.—Eugallol acts as an energetic substitute for pyrogallol, but is liable to produce local irritation when applied to the skin. It is recommended for external use in old and persistent cases of psoriasis. Dosage.—It is applied pure by pencilling once a day, covering the painted part with powdered zinc oxide, suspending the application a few days if it is followed by irritation. Manufactured by Knoll & Co., Ludwigshafen a. Rh. and New York. German patent No. 104,663.

EUMYDRIN.—METHYLATROPINE NITRATE. ATROPINEMETHYL NITRATE.

Eumydrin, $C_6H_5(HO.CH_2)CH.CO_2.C_7H_{11}N(CH_3)_2NO_3 = C_{18}H_{26}O_6N_2$, is the nitrate of methylated atropine.

Actions and Uses.—Eumydrin is a mydriatic and antihydrotic, replacing atropine sulphate both internally and externally in corresponding doses. It is claimed that it dilates the pupil more rapidly than atropine and the dilatation is of shorter duration, being intermediate in these respects between atropine and homatropine. It is said to be much less toxic than atropine, so that larger doses may be given to secure the effect. It is particularly recommended for the treatment of night sweats, whooping cough and the relief of enuresis. Dosage.—Internally as an antihydrotic, 0·001 to 0·0025 gramme ($\frac{1}{60}$ to $\frac{1}{24}$ grain). Externally as mydriatic, in solutions about one-tenth stronger than the usual atropine solutions. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color and Chemical Co., New York). German patent Nos. 137,622 and 138,443.

EUPHORIN.—PHENYL URETHANE. PHENYLETHYLURETHANE. PHENYLCARBAMIC ACID ETHYL ESTER.

Euphorin, $CO(HN.C_6H_5)(OC_2H_5) = C_9H_{11}O_2N$, is a compound closely allied to Æthylis Carbamas, U.S.P. (urethane), and differing from this by the replacement of the group NH_2 by NHC_6H_5.

Actions and Uses.—Euphorin is anodyne, antipyretic and antiseptic. It is recommended in rheumatism, sciatica, headache, etc. Externally it is recommended to be applied as a dusting powder in venereal and skin diseases, ulcers, burns, etc. Dosage.—0·5 to 1 gramme (8 to 15 grains) dissolved in wine or suspended in water; externally in powder, in lanolin ointment and in superfatted soap. Manufactured by Fabrik von Heyden, Radebeul, near Dresden. U. S. trade-mark.

EUPHTHALMIN.—EUPHTHALMINE HYDROCHLORIDE. PHENYLGLYCOLYLMETHYL-VINYL DIACETONALKAMINE HYDROCHLORIDE.

Euphthalmin, $C_{17}H_{25}NO_3.HCl$, is a mandelic acid derivative of beta-eucaine.

Actions and Uses.—Euphthalmin produces prompt mydriasis free from anesthetic action, pain, corneal irritation, or rise in arterial tension. It has little or no effect on accommodation, and this disappears more rapidly than with atropine, cocaine, homatropine, etc. In its effects on the general system, euphthalmine very closely resembles atropine. It is recommended as an aid in ophthalmoscopic examinations in place of atropine, homatropine, etc. Dosage.—2 or 3 drops of a 5 to 10 per cent. solution, according to age of the patient and the nature of the case, are instilled into the eye. Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering, Berlin (Schering & Glatz, New York). U. S. patent No. 663,754. U. S. trade-mark No. 35,541.

EUQUININE.—QUININE ETHYL CARBONATE. EUCHININ. CHININUM AETHYLCARBONICUM.

Euquinine, $C_2H_5O.CO.OC_{20}H_{23}N_2O = C_{23}H_{28}O_4N_2$, is quinine ethyl carbonic acid ester.

Actions and Uses.—Euquinine is claimed to have the same action as quinine, with the advantage of being tasteless, owing to its insolubility in water and alkaline media. Dosage.—The same as quinine. Manufactured by Vereinigte Chininfabriken, Zimmer & Co., Frankfort a. M. (Merck & Co., New York). U. S. patent No. 585,068. U. S. trade-marks Nos. 640,977 and 701,523.

EURESOL.—RESORCIN MONACETATE. MONACETYL-RESORCINOL.

Euresol, $C_6H_4(OH)(CH_3COO) = C_8H_8O_3$, is an acetic acid ester of resorcinol (1, 3-phen-diol).

Actions and Uses.—Its action is similar to that of resorcinol, but milder and more lasting because of the gradual liberation of the phenol. Euresol is recommended in acne, sycosis, seborrhea, and particularly in the treatment of chillblains. Dosage.—It is applied in 5 to 20 per cent. ointments and in acetone solution. Manufactured by Knoll & Co., Ludwigshafen a. Rh. and New York. German patents Nos. 103,857 and 122,145.

EUROPHEN.—DI-ISOBUTYL-CRESOL IODIDE. ISOBUTYL-ORTHOCRESOL IODIDE. IODOSO-DIISOBUTYL-CRESOL.

Europhen, $C_6H_3(C_4H_9)(CH_3)(OI).C_6H_2(CH_3)(:O)(.C_4H_9) = C_{22}H_{29}O_2I$, is a condensation product of 2 molecules of isobutylorthocresol, with 1 atom of iodine, analogous to Thymolis Iodidum, U.S.P.

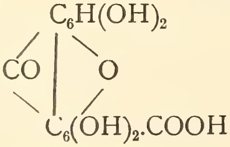
Actions and Uses.—Its action is similar to that of iodoform and thymol iodide. It is claimed especially to be useful in the treatment of venereal ulcerations. Dosage.—Europhen may be given internally in the form of pills in doses of from 0·2 to 0·3 gramme (3 to 5 grains). Locally it may be used as a dusting powder in substance or mixed with an equal quantity of finely powdered boric acid, as an ointment, with wool fat (lanolin), or as a 5 per cent. embrocation, dissolved in olive oil. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color and Chemical Co., New York). U. S. patent No. 495,204; German patent No. 56,830. U. S. trade-mark No. 17,888.

FERROPYRINE.—ANTIPYRINEFERRIC CHLORIDE. ANTIPYRINA CUM FERRO.

Ferropyrine, $(C_{11}H_{12}N_2O)_3.(FeCl_3)_2$, is a compound of antipyrine and ferric chloride, containing about 36 per cent. of ferric chloride and 64 per cent. of antipyrine.

Actions and Uses.—It is hematinic, hemostatic, astringent, analgesic and tonic. Its styptic action is pronounced and said not to be accompanied by irritant effects. According to Fraenkel, it combines with its hemostatic properties the injurious by-actions which limit the application of ferric chloride as a hemostatic. It is recommended internally in anemia, chlorosis, gastric and intestinal hemorrhage, intestinal catarrh, etc., in migraine and neuralgia. Externally it is applied in gonorrhea, epistaxis, hemorrhages from the throat or vagina, or bleeding after tooth extraction, etc. Dosage.—0·3 to 1 gramme (5 to 15 grains) in powder, with sugar and peppermint, or in solution. Externally 1 to 1·5 per cent. solution as injection, to 20 per cent. solution or pure for hemorrhages. Manufactured by Knoll & Co., Ludwigshafen. U. S. patent No. 548,352. U. S. trade-mark No. 26,860.

GALLOGEN.—ELLAGIC ACID. BENZOARIC ACID.

Gallogen, 

$$\mathrm{CO}\begin{matrix} C_6H(OH)_2 \\ | \\ C_6(OH)_2.COOH \end{matrix}\mathrm{O}$$

$= C_{14}H_6O_8$, is anhydrous ellagic acid prepared from Divi-divi, the pods of *Cæsalpina coriaria*, containing more than 50 per cent. of tannin.

Actions and Uses.—Gallogen is an astringent and antidiarrheic, slowly decomposed in the intestinal tract, thus exerting its astringent action gradually during its passage. It has been recommended in dysentery, cholera infantum, diarrhœa, and is said to be useful even in those of a syphilitic or tuberculous origin. Dosage.—0·3 to 0·5 gramme (5 to 8 grains) for children; 0·6 to 1 gramme (10 to 15 grains) for adults, suspended in neutral or slightly acid media. Manufactured by Ad. Heinemann, Eberswalde (C. Bischoff & Co., New York). German patents Nos. 137,033 and 137,034.

GLYCEROPHOSPHATES.—GLYCERINOPHOSPHATES. GLYCERYLPHOSPHATES.

Glycerophosphates are the salts of glycerophosphoric acid, $H_2(CH_2OH.CHOH.CH_2)PO_4$; usually the two remaining hydrogen atoms of phosphoric acid are replaced by the base: $Na_2(CH_2OH.CHOH.CH_2)PO_4$.

Actions and Uses.—These salts were introduced as "nerve foods" and tonics on the theory that their phosphorus, being a step nearer lecithin, is assimilated more readily than that of hypophosphites. Neither the experimental nor the clinical evidence is considered conclusive by all authorities. Dosage.—The potassium and sodium salts may be given hypodermically 0·2 to 0·25 gramme (3 to 4 grains) in normal saline solution, or *per os* 0·25 to 0·65 gramme (4 to 10 grains) in water or syrup. The calcium, iron, lithium, magnesium and manganese salts 0·2 to 0·65 gramme (3 to 10 grains) doses, preferably in the form of tablets; the quinine salt in 0·1 to 0·33 gramme (1½ to 5 grains), and the strychnine salt in 0·001 to 0·003 gramme $\frac{1}{60}$ to $\frac{1}{20}$ grain) doses.

GUAIAMAR.—GUAIACOLGLYCERYLESTER.

Guaiamar, $C_6H_4.OCH_3.O\,(CH_2OH.CHOH.CH_2)$, 1 : 2, $= C_{10}H_{14}O_4$, is the monoguaiacol ester of glycerin.

Actions and Uses.—The chief value of guaiamar arises from the liberation of guaiacol, partly in the stomach and partly in the intestinal canal, being split up by the gastric and intestinal contents with the assimilation of one molecule of water into guaiacol and glycerin. By this evolution of guaiacol it is believed to exert a useful antiseptic action in the intestinal canal. Moreover, it is asserted that it is absorbed by the skin as readily as by the alimentary canal, and that it is without effect on the sound tissue, but becomes effective at the location of the diseased part. It is said not to interfere with the normal process of digestion, but, on the contrary, to be followed by decided tonic action. It is recommended as a substitute for guaiacol in all cases where the latter is indicated. In the form of ointment it has been recommended in acute articular rheumatism. Dosage.—0·3 to 1·3 gramme (5 to 20 grains) in capsules or dissolved in warm water. Locally, in the form of 25 per cent. ointment with wool fat (lanolin), by itself, or combined with belladonna, zinc or mercurial ointment, etc. Manufactured by Mallinckrodt Chemical Works, St. Louis. U. S. patent No. 599,125.

(*To be continued.*)

NEW ESSENTIAL OILS.[1]

In our last Report we mentioned on pages 82–83 two new oils—of EVODIA SIMPLEX and PILEA—which had been sent to us by the Syndicat du Géranium Bourbon. Of a third oil, which we had received at the same time, we did not then give a description, as that oil was described simply as oil of "une espèce nouvelle." Since then we have heard from Réunion that the oil is obtained from a shrub belonging to the *Rutaceæ,* which de Cordemoy has described under the name of *Evodia aubertia,* but which is said to have been known already for a long time under the name *Xanthoxylum aubertia.* This plant is known in Réunion under the name "Catafaille blanc," and is highly esteemed there as a very active remedy for wounds, but is also employed as a diaphoretic and a blood-purifying remedy. Unfortunately we found no description of this variety in the botanical works which we have at our disposal; we are also unable to say from what part of the plant the oil has been obtained. It represents a yellowish-green liquid with a pronounced odor like parsley; d_{15° 0·9052; a_D — 62° 10′; acid No. 1·3; ester No. 7·3; ester No. after acetylation 51·0. The solubility in 90 per cent. alcohol is not complete, and even with 10 vol. alcohol only a very cloudy solution is obtained; in 95 per cent. alcohol the oil makes first of all a clear solution, but when more than 2 vol. are added opalescence occurs owing to separation of paraffin.

A test for phellandrene which we suspected to find in the oil had a negative result. It appears from the ester and acetylation numbers that the oil contains only very small quantities of ester-like and alcoholic constituents.

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[1] From Schimmel & Co.'s Semi-annual Report, April, 1907.

A second sample of oil from the same species, which we received a short time ago, had also the characteristic parsley-like odor of the former oil, but differed considerably from the latter in respect of specific gravity and rotation, and showed in these properties a remarkable agreement with the oil of *Evodia simplex*.[1] The constants were as follows: $d_{15°}$ 0·9708; a_D — 19° 20′; acid No. 1·1; ester No. 8·7; ester No. after acetylation 33·0. The solubility of this oil was also better than that of the one received before, as it dissolved in every proportion in 90 per cent. alcohol; when highly diluted (1 : 10) a faint opalescence occurred. With 10 vol. 80 per cent. alcohol it did not form a clear solution.

Whether these differences between the two oils must be attributed to various methods of distillation, or to different stages of development of the plants due to the time of the year, we are unable to say.

Along with the oil just discussed we also received another sample of the pilea oil already described in detail in our last Report.[2] The oil now received showed a greenish tinge, and had a considerably higher rotation, a_D + 58° 20′; for the rest it agreed with the previous oil; $d_{15°}$ 0·8520; $n_{D20°}$ 1·46902; acid No. 0; ester No. 7·7; ester No. after acetylation 34·4; soluble in 3·8 and more vol. 90 per cent. alcohol.

From the BUDS OF THE BLACK CURRANT (*Ribes nigrum* L.), which had been sent to us from Russia, we obtained in a yield of 0·75 per cent. an essential oil of the following constants: $d_{15°}$ 0·8741; a_D + 2° 30′; $n_{D20°}$ 1·48585; acid No. 0; ester No. 5·6; soluble in 6·5 and more vol. 90 per cent. alcohol with slight cloudiness, which disappears on greater dilution (1 : 10). The oil had a pale greenish color and, judging from the odor, appeared to contain among others cymene. As we only had a few grammes of oil at our disposal, we must content ourselves with the enumeration of the foregoing data.

AYAPANA OIL. The oil of *Eupatorium triplinerve* Vahl (*E. Ayapana* Vent), a composite indigenous to equatorial Africa, which in other tropical districts is often growing wild, but in the East Indies is cultivated as a tea-plant, was sent to us from Mayotte, one of the Comoro Islands, in the Straits of Mozambique, under the name of "essence d'ayapana."

The oil has a pale-green color and a peculiar odor; $d_{15°}$ 0·9808; a_D + 3° 10′; ester No. 8·0; ester No. after acetylation 23·4. It forms a clear solution with 1½ times its vol. 90 per cent. alcohol, but is practically insoluble in 80 per cent. alcohol. On fractional distillation at 3·5 mm. pressure it was found that, apart from a small quantity first runnings with a terpene-like odor, and an equally unimportant residue, the oil boiled almost uniformly. We obtained three fractions with the following properties:

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[1] Comp. Report, October, 1906, 82.

[2] Report, October, 1906, 83.

		Per Cent.		
1.	40 to 104°	5·6	$d_{15°}$ 0·9680	$\alpha_D + 10° 40'$
2.	104°	51·8	$d_{15°}$ 0·9825	$\alpha_D + 1° 35'$
3.	104 to 105°	28·0	$d_{15°}$ 0·9848	$\alpha_D + 3° 5'$
	residue:	15·9		

When once more distilled over metallic sodium, the bulk was obtained almost unchanged with the following constants: b. p. 237 to 238° (750 mm. pressure), $d_{15°}$ 0·9891; $\alpha_D + 0° 40'$; miscible in every proportion with 90 per cent. alcohol.

An attempt to arrive by means of potassium permanganate at an oxidation product led to an acid, readily soluble in alcohol and ether, but with difficulty in water, which, after repeated recrystallization from aqueous alcohol, melted at 93°. But even at the temperature of the water-bath, only about 25 per cent. of the oil could be oxidized, whilst 75 per cent. remained behind almost unchanged. The results show that the oil consists chiefly of a uniform body.

OIL OF MENTHA ROTUNDIFOLIA L. A small sample of oil from *Mentha rotundifolia* L., which was sent to us from Algeria, had a dark orange-yellow color and a musty, faint, somewhat pungent odor, which distantly resembled the odor of spearmint oil. The constants were as follows: $d_{15°}$ 0·9777; $\alpha_D - 37° 30'$; acid No. 1·5; ester No. 71·2; ester No. after acetylation 209. The oil was miscible in all proportions with 90 per cent. alcohol and dissolved in 1 vol. 80 per cent. alcohol. On dilution, strong cloudiness and separation of small oil drops occurred immediately.

OBITUARIES.

Within the last six months, Science has lost by death some five or six of its most distinguished representatives in the persons of eminent European chemists. Of these several are represented on our list of Honorary Members, and a brief notice of several of them may therefore be of interest.

First came the death, in October last, of the author of the monumental "Handbook of Organic Chemistry," Friedrich Beilstein, of St. Petersburg. This book has grown to the proportions of an encyclopedia, the last edition being in four large volumes, and it has the authority of an indisputed reference book for chemical students throughout the world. We have received the last edition for our library, as it appeared in numbers, direct from the author, who desired to show his appreciation of his honorary membership in the Philadelphia College of Pharmacy.

Friedrich Beilstein was born in 1838, at St. Petersburg, studied chemistry with Bunsen, at Heidelberg, Germany, in 1853–55; with Liebig, in Munich, in 1855 to 1856; and with Wöhler, in Göttingen, in 1857–58, in which latter year he made his Doctor's degree. After spending an additional year with Wurtz, in Paris, he returned to Göttingen and became assistant to Professor Wöhler. In 1865 he became an Assistant Professor at Göttingen, but in the following year received a call to St. Petersburg, his native city, where he remained to the end of his career. While Beilstein published more than a hundred scientific papers and devoted some considerable attention to the investigation of the Russian petroleum, his name is known chiefly by his monumental work before referred to. The first edition of this appeared in 1880–82, and at once became authoritative for all workers in organic chemistry. The third edition (the last upon which Beilstein himself worked) was finished in 1899, and since then the supplementary volumes which are to keep it up to current conditions of chemistry have been published by the Berlin Chemical Society under the editorship of Professor Jacobson.

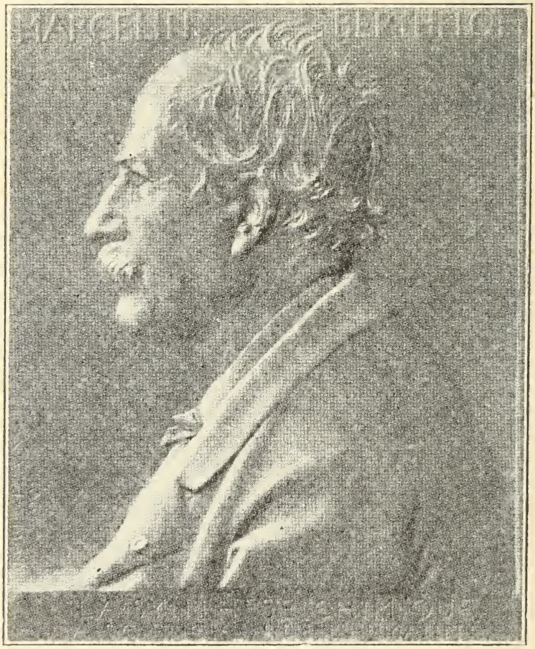
In February of this year died a still greater Russian chemist, in fact, the most distinguished name Russia has ever produced in chemistry, viz., Mendelejeff, known to every chemical student as the author of the "Periodic System," the most important and far-reaching theory of the chemical elements since the establishment of the atomic theory of Dalton. He was born at Tobolsk, in Siberia, the youngest child of a family of seventeen. His early education was obtained at his native home and at St. Petersburg, where he qualified as a lecturer on physics and chemistry already at the age of twenty-two, and began at this age his publications on subjects of physical chemistry. He went to Heidelberg in 1860, remaining there two years, having a small private laboratory during that time, and publishing important papers, chiefly on physics. In 1863 he returned to St. Petersburg, where he remained for the rest of his life. He began shortly after the publication of his "Principles of Chemistry," of which seven editions have appeared in Russian and three in English. While engaged upon this work, he announced his views of the arrangement of the elements according to the Periodic Law in 1869. While similar views had been advanced before in vague outlines, Mendelejeff's theory showed how all the physical and chemical properties of the elements could be deduced from their position when arranged according to the order of their atomic weights. He went further and showed where hypothetical and as yet undiscovered elements should find their place in his arrangement and predicted their physical and chemical properties with many details. The discovery of gallium (1875), germanium (1886) and scandium (1888), and the exact correspondence of these elements in all respects with three of the hypothetical elements predicted by Mendelejeff, confirmed in the minds of chemists the value of his theory and the fitting into his system of the five rare atmospheric gases by Ramsey again demonstrated its great importance as a working theory. Mendelejeff, however, devoted much of his time to important practical and economic problems. He visited America in 1876 at the instance of the Russian Government to study the Pennsylvania oil production, and on his return devoted his efforts to the scientific development of the Russian oil industry. At the same time he put forward a new theory of the origin of petroleum which has found many advocates. He also acted as the adviser of his Government in many other directions, studying, for example, nitro-explosives and inventing a smokeless powder for them. He retained his mental and physical powers unimpaired until shortly before his death at the age of seventy-three.

A week or two after the announcement of the death of Mendelejeff, in February of this year, came the announcement of the death, following an operation for appendicitis, of the eminent French chemist, Moissan. Unlike the two just mentioned, Moissan was in the prime of life, not having reached his fifty-fifth year of age. Unlike the others, also, Henri Moissan has been officially connected with pharmacy during most of his active career, having secured, in 1879, the appointment of "Chief of Practical Exercises," equivalent to a demonstratorship, in the "Ecôle Supérieure de Pharmacie," of

Paris, where he rose later to a full professorship, only leaving the school in 1900, when he was chosen the successor of Troost in a professorship at the Sorbonne, the highest educational institution in Paris. He had already accomplished much of value when he began, in 1883, the study of fluorine compounds, with the avowed hope of isolating the element that had eluded so many able investigators before him. In 1886 he announced finally and demonstrated to the Academy of Sciences the isolation of this interesting element. In 1897, moreover, in conjunction with Sir James Dewar, in London, he succeeded in liquefying it. In 1892 he turned to the line of work with which his name is chiefly associated, viz., the study of chemical reactions, brought about by the high temperature of the electric arc, or, as it is commonly called, the work with the electric oven. He was led to take up these high-temperature researches chiefly by his desire to solve the mystery of the origin of the diamond. The result of his work was the formation of the diamond by forcing the crystallization of carbon dissolved in cast iron on immersing this latter when in the molten state into cold water. He also prepared and studied for the first time pure molten chromium, tungsten, molybdenum, uranium, titanium and other metals, formed and described a large number of metallic carbides, borides, and silicides of the metals. His published papers are said to have numbered over 300. He was president of the International Congress of Applied Chemistry, held at Paris in 1900, and twice visited this country, first at the time of the Princeton University Centenary and again in 1904, when he read a paper before the Chemical Congress at St. Louis on "Recent Advances in Inorganic Chemistry." In 1906 he received the greatest honor from outside of France, the Nobel Prize for Chemistry. Had he lived to the full measure of a man's life, he would have undoubtedly done many more great things for chemical science by reason of his great experimental skill and equally great industry and devotion to science.

On the 18th of March occurred the death of the greatest living chemist of France and one of the greatest of any country, namely, Marcelin Berthelot, in his eightieth year. In France, where hero-worship prevails to a greater degree than with us, he was honored by a State funeral, which the President and the officers of both chambers of the legislative body attended, and was buried in the Pantheon with the great men of his country.

Berthelot was a connecting link with the founders of modern chemistry in the beginning of the nineteenth century, having studied under and acted as assistant to Balard, the discoverer of bromine. In 1901 Berthelot celebrated the fiftieth anniversary of his scientific work, when he was presented with addresses from learned societies (140 in number) and a gold medal struck in his honor was handed him by the President of the French Republic, inscribed on the face with his bust and name and the inscription: " La Synthese Chimique, la science guide l'humanitie," and on the reverse is shown the synthesis of acetylene, one of his earliest discoveries, and the inscription, "Pour le patriê et la verité."



MARCELIN BERTHELOT.

His first professorship, in 1859, was that of organic chemistry at the Ecôle Supérieur de Pharmacie, and from there he went, in 1865, to the College of France, to a new chair specially created for him, and here he remained for the rest of his life.

His first great work was his "Synthese en Chimie Organique," published in 1864, in which he showed how from carbon and hydrogen acetylene was directly built up and from this many other hydrocarbons and their derivatives. The whole subject of thermo-chemistry and the experimental study of the heat of reaction was developed by him, and with this the subject of gas analysis was greatly improved. Called in to study explosives in connection with the defence of Paris in 1870, he made most elaborate studies on the subject and became one of the greatest authorities upon this subject. Berthelot devoted much time to biological, physiological and agricultural chemistry. Chemical theory was, moreover, greatly developed by the studies and publications of Berthelot, and finally the history of chemistry and its forerunner alchemy, was studied by him and presented in his writings with great thoroughness. He did much for education in France, having been Minister of Public Education in 1886–87, and in 1895–96 he became Minister of Foreign Affairs and the head of his country's diplomatic service.

He was a most prolific writer, having published some 1,500 papers and scientific notices, besides some forty-six volumes of more permanent value.

S. P. SADTLER.

BOOK REVIEWS.

PRACTICAL PHYSIOLOGICAL CHEMISTRY. A book designed for use in courses in practical physiological chemistry in schools of medicine and of science. By Philip B. Hawk. With two full-page plates of absorption spectra in colors, four additional full-page color plates and one hundred and twenty-six figures, of which twelve are in colors. Philadelphia: P. Blakiston's Son & Co. $4 net.

This volume on physiological chemistry by Dr. Hawk is one of the most interesting and valuable that it has been our pleasure to review. It is original, up-to-date and contains just such information as the practical man and the worker in the laboratory are looking for. About 100 pages are devoted to the studies of carbohydrates; proteids; fats; bile; salivary, gastric and pancreatic digestion. About an equal number of pages are devoted to the study and examination of urine. The remaining portion of the book, about 200 pages, is given up to the consideration of milk, blood, feces, putrefaction products, etc. Some of the recent work of Reichert and Brown on hæmoglobin and of Osborne on proteids is also included. The illustrations are numerous and will be found helpful.

The Principles of Qualitative Analysis from the standpoint of the theory of electrolytic dissociation and the law of mass action. By Wilhelm Böttger. Translated with the author's sanction and revised with his co-operation by William G. Smeaton. With ten illustrations. Philadelphia: P. Blakiston's Son & Co. $2 net.

Dr. Böttger's work on qualitative analysis is the outcome of a need "for a text-book which introduces modern conceptions into the teaching of qualitative analysis." The work opens with a discussion of the laws governing chemical reactions, the theory of electrolytic dissociation and the law of mass action. It is divided into four parts: (1) testing a solution for metals; (2) testing a solution for anions; (3) the complete analysis of a given unknown; (4) the rare elements. There are a number of excellent analytical tables and numerous references to the literature. The book is largely based on Ostwald's "Principles of Inorganic Chemistry," from which some of the illustrations have been taken.

In the translation Dr. Smeaton has incorporated two new sections, one on bromates and one on iodates, and added some tests and references in Parts I and II. The work illuminates the whole subject of qualitative analysis and is an important addition to the list of laboratory books.

Merck's 1907 Index. An encyclopedia for the chemist, pharmacist and physician. Third edition. New York: Merck & Co., 15 University Place.

Merck's Index gives the names and synonyms; source or origin; chemical nature and formulas; physical form, appearance and properties; melting and boiling points; solubilities; specific gravities and methods of testing; physiological effects; therapeutic uses; modes of administration and application; ordinary and maximum doses; incompatibilities; antidotes; special cautions; hints on keeping and handling, etc., of the chemicals and drugs used in chemistry, medicine and the arts.

Probably no work is more often consulted in the laboratory than Merck's Index, as it contains much of the information that one wants quickly.

ARBEITEN AUS DEM PHARMAZEUTISCHEN INSTITUT. Herausgegeben von Dr. H. Thoms, Professor und Direktor des Pharmazeutischen Institutes der Universität Berlin. Vierter Band Umfassend die Arbeiten des Jahres, 1906. Mit 10 Abbildungen und 6 Tafeln. Berlin und Wien: Urban & Schwarzenberg. 1907.

This is the fourth volume that has emanated from the Pharmaceutical Institute of the University of Berlin under the able directorship of Professor Thoms. It sets the pace, not only for the spirit, but the work which should be carried on by the colleges and schools of pharmacy. The contents of the work are separated into eight classes:

(1) The examination of new chemical substances, which includes ten papers by F. Zernits on: alypin, aspirophen, salicylic acid derivatives of benzosalins, forenurol, migränin Höchst and some of its substitutes, new-sidonal, proponal, sajodin, sulfopyrin, beta-sulfopyrin and theporin.

(2) The examination of patent preparations and household remedies, which includes fifty-five papers by J. Kochs, on: Antineurasthin, antipositin, antisanguin, angenwol, Ayer's cathartic pills, brandol, Burkhart's Kräuter-Pillen, circulol and assanol, cista, creolin Pearson, Anna Csillags Haarwuchsmittel, dattel-sirup, diabet-eserin, divinal, eidol, epilepsiemittel, estors vaginalstifte, fascolsalbe, fleur de cologne, fromosasprudel, fulgural, gallensteinmittel, grandira, grazianapräparate, Grossmann's Kraft- und Nähremulsion, Haarfärbemittel, Dr. John P. Haig's goitre cure, Dr. B. W. Hair's asthma cure, hair grower, Dr. P. Harold Hayes' Asthma-Medizinen, Henkel's schmerzlose Pulpa-Entfernungstinktur, isn, kapitol, ketels antiscabin, Kopfsschmerzpulver und Bandwurmmittel, Kruppmittel, lithosan, lytrol, melol, menstruationspulver Geisha, Myrtill-Laxsier-Saft, L. & G.'s Nervenheil-Zigarre, Okertin, ophthalmol, pallabona, pararegulin, pilules du Dr. Laville, plantal, Plougmann's danisches Viehpulver, poudre uterine de Roux, Reichel's Hustentropfen, rheumatismuspulver, Dr. Ernst Sandow's künstliche Mineralwassersalze, styptogan, theyolip-salbe.

(3) Synthetic organic chemicals includes the following papers by C. Mannich: "Tautomerie des cyclohexanons;" "Kondensation des cyclohexanons;" and "Triphenylen," and one paper by E. Höst–Madsen on the "Kondensationen von Aldehyden mit Phenolkarbonsäuren."

(4) Three chemical-pharmacognostical papers: D. Jonesen on "Die Bestimming von Alkaloiden durch Fällung mit Kalium-wismutiodidlösung;" K. Lewinsohn on "Myrrhenöl;" and H. Thoms on "Mohnbau und Opiumgewinnung."

(5) A chemical-physiological paper by D. Jonesen on "Die Antipyrinausscheidung aus dem menschlichen Organismus."

(6) Two papers on the preparation of galenical preparations by J. Herzog: "Ueber die Zweckmässigkeit von Perkolation oder Mazeration zur Herstellung von Tinkturen" and "Vorschläge betreffend die Aufnahme eines neuen 'Cresolum Crudum' in das deutsche Arzneibuch."

(7) Five papers representing the examination of food, technical and other products from abroad: G. Fendler on "Bericht über die Tätigkeit der nahrungsmittelchemischen und kolonialchemischen Abteilung;" H. Thoms and G. Fendler on "Zur Leniöluntersuchung;" G. Fendler on "Ueber Zusammensetzung und Beurteilung der im Handel befindlichen Kokosfettpräparate;" H. Thoms and G. Fendler on "Ueber die Beurteilung der neuerdings in dem Handel gelangenden gefärbten Kokosfette und Kokosfettgemische im Lichte des Gesetzes vorm 15. Juni 1897;" and H. Thoms on "Untersuchung von Wasser- und Salzproben des Great Salt Lake in Utah, U. St. of N. A."

(8) Under new apparatus, W. Lenz has a contribution on "Einfache Vorrichtung zur Kühlung mit Wasser von bestimmten Warmegrade."

This work of 340 pages is one of the most valuable and interesting contributions to practical pharmacy and medicine that has appeared, and if every school and college of pharmacy were engaged in doing this kind of work, we believe that the use of nostrums would cease and that the era of professional pharmacy would be ushered in. If pharmacy is to hold its own as a profession, it must be through the investigations in the schools and through the spirit of research developed in the students.

PRACTICAL TEST-BOOK OF CHEMISTRY. By John Dabney Palmer, M.A., M.D. New York: John Wiley & Sons, 1907. 190 pp. $1.00 net.

The object of this book is, as stated by the author, to supply physicians and pharmacists with a ready means and safe guide for testing any substance presented for examination. Over 200 chemicals and industrial products are considered. Almost all of the information contained in this book will be found in standard works, as the pharmacopœia or dispensatories and works on food analysis. The greatest difficulty with a book of this kind is that the tests are inadequate for many substances, as that for black pepper. In other instances they are unwarranted, as in that given for the detection of acacia in tragacanth. In still other cases they are impracticable, as in the determination of the purity of arrowroot. The idea of the author is good; but the book, as it is developed, is unnecessary and more confusing than helpful.

CHEMICAL REAGENTS, their purity and tests. A new and improved test based on and replacing the latest edition of Krauch's "Die Prüfung der chemischen Reagentien auf Reinheit." By E. Merck. Authorized translation by Henry Schenck. New York: D. Van Nostrand Company. 1907. 250 pp. $1.50 net.

The tests given in this book may be taken as reliable, and may be considered to furnish an excellent basis for uniform standards of such chemicals as are used in analytical work. The book will continue to be used until the Committee on Purity of Reagents, appointed by the American Chemical Society in 1902, shall present a final report on all chemical reagents, which will be then accepted by the chemists of the United States.

The issuance of this book in its revised form will be appreciated by chemists generally, as the statement is made that the initials C. P., etc., have no meaning unless manufacturers and analysts insist that C. P. chemicals conform to certain uniform standards. If there is any place where nearly absolute purity is required, it is in chemical reagents, and it is fortunate that analytical chemists are realizing the importance of this subject.

BEASLEY'S DRUGGISTS' RECEIPT BOOK. Rewritten by E. W. Lucas. Eleventh edition. Philadelphia: P. Blakiston's Son & Co. 1907. 451 pp. $2.50.

This work, which is well known to druggists, contains: (1) A veterinary materia medica, with prescriptions illustrating the employment of drugs in general use for the treatment of the more common ailments of animals; (2) a pharmaceutical formulary for the manufacture of proprietary articles, toilet preparations, dietetic articles, household specialties, etc.; (3) a photographic formulary; (4) a synopsis of practical methods employed in the examination of urine, milk, potable waters, sputum, etc.; and (5) numerous chemical and other tables likely to be of use to pharmacists and manufacturers.

The present edition has been brought up-to-date and will continue to be one of the most valued receipt books for druggists, chemists and others who may require information of this kind.

MATERIA MEDICA AND PHARMACY. By Reynold W. Wilcox. Seventh edition, revised. Philadelphia: P. Blakiston's Son & Co. 1907. 490 pp. $2.50.

This work of Dr. Wilcox's is well known, not only among medical men, but is also largely consulted by pharmacists. In this volume "full attention is given to pharmaceutical processes, to the various kinds of preparations, with their dosage, and to the art of prescribing; after which the description of remedies is taken up in detail." There is a companion to this volume which contains very elaborate accounts of the pharmacological action and therapeutics of pharmacopœial drugs and preparations.

About one-half of this volume on materia medica and pharmacy is devoted to pharmacopœial text, the remainder being devoted to the action and uses of the remedies. While there is a question as to the advisability of the author's burdening his book with standard matter of this kind, which is in the Pharmacopœia, and which latter book should be in the hands of every physician and pharmacist, still it has been cleverly arranged and will be likely to be used until publishers see that a better book can be gotten out with one-half the number of pages and that will reflect greater credit on them as well as the author.

OSBORNE'S INTRODUCTION TO MATERIA MEDICA AND PHARMACOLOGY. An introduction to the study of Materia Medica and Pharmacology, including the Elements of Medical Pharmacy, Prescription Writing, Medical Latin, Toxicology and Methods of Local Treatment. For the use of students of medicine and pharmacy. By Oliver T. Osborne. Lea Brothers Company, Publishers, Philadelphia and New York, 1906. In one 12mo volume of 167 pages. Cloth. $1 net.

Unlike the work just alluded to, is this book by Dr. Osborne. It has been written to help the student use the Pharmacopœia and furnishes an excellent foundation for the study of pharmacology and therapeutics. The first section, on Experimental Pharmacology, is intended as an introduction to the laboratory course. The next section, on the Action of the Important Drugs, is arranged alphabetically to allow the instructor free choice of the drug he will demonstrate, and furnishes to the student a quick and convenient reference to the physiological action of each drug. The section on Pharmacy explains the important preparations of the United States Pharmacopœia. The doses are given in both systems, and preparations are grouped according to the size of the dose, this perhaps being the best means of helping the student to remember them. The sections on Poisoning, Weights and Measures, Latin Abbreviations, Prescription Writing and Dosage are all of great importance to the future practitioner of medicine, and are all subjects which in the usual medical course do not receive the attention which they deserve. The latter part of the book, which briefly describes the various methods of locally treating different parts of the body, will be found exceptionally valuable, and belong in a book of this introductory type rather than in a larger work.

Both the medical student and pharmacist will be benefited by reading and studying a work of this kind. It stimulates thought and will be found helpful in practice.

THE FOOD AND DRUGS ACT. A study with the text of the act, annotated, the rules and regulations for the enforcement of the act, food inspection decisions and official food standards. By Arthur P. Greeley. Washington: John Byrne & Company. 1907. 8vo., pp. 176. $1.50.

This timely work is "a critical study of the Federal Food and Drugs Act," and will no doubt prove of value to manufacturer, jobber and retailer of foods and medicines alike. The book contains chapters on the general purposes and scope of the act; procedure under the act; articles to which the act applies; adulteration; misbranding; the guaranty; rules and regulations for the enforcement of the food and drugs act; food inspection decisions; standards of purity for food products, and a number of miscellaneous notes.

SELF-PROPELLED VEHICLES. A practical treatise on the theory, construction, operation, care and management of all forms of automobiles. Fifth revised edition, entirely rewritten. By James E. Homans. New York: Theodore Audel & Co. 1907.

This book is not only of value to owners and manufacturers of self-propelled vehicles, but will be of interest to physicists, engineers and those engaged in educational work. It contains upwards of 500 illustrations and diagrams, giving the essential details of construction and many important points on the successful operation of the various types of motor carriages driven by steam, gasoline and electricity.

THE AMERICAN POCKET MEDICAL DICTIONARY. Edited by W. A. Newman Dorland, M.D., editor of "The American Illustrated Medical Dictionary." Fifth revised edition. Philadelphia and London: W. B. Saunders Company. 1906. 32mo of 574 pages. Flexible morocco, gold edges, $1 net; thumb indexed, $1.25 net.

This is a useful book of medical terms and their definitions. Being convenient in size, it can always be kept on the table or even carried in the pocket and consulted more readily than a larger book, which usually necessitates going to the bookcase or special table where it is kept. If one desires to be accurate in thought, writing or speech, one must use a dictionary rather freely, and this work of Dorland's will be helpful to physicians, pharmacists and biologists.

PHYSICIANS' MANUAL OF THE PHARMACOPŒIA AND THE NATIONAL FORMULARY. By C. S. N. Hallberg and J. H. Salisbury. Chicago: American Medical Association. 1907. 198 pp. 50 cents.

Any book which will cause the physician to recognize the necessity of prescribing standard drugs and preparations is of great value. If the drugs and preparations recognized in the U.S.P. and N.F. are not what he employs, then it is all the more important that the Committee of Revision are made aware of this. Surely with the United States Pharmacopœia, the National Formulary and the list of new and non-official preparations, published by the Council on Pharmacy and Chemistry of the American Medical Association, the physician must have an armamentarium of drugs and galenicals that is nearly complete.

As a reference book for physicians this manual will be both convenient and valuable, particularly as the preparations into which the drug enters are given with each drug.

TRAITÉ DE TOXICOLOGIE VÉGÉTALE. Application du Microscope a la Recherche des Poisons Végétaux par M. Eug. Collin. Avec 180 figures dans le Texte. Paris: Octave Doin, Éditeur. 1907. 205 pp. 6 fr.

This new work by Collin on the botany and pharmacognosy of the important poisonous vegetable drugs is of considerable interest. It is the best book in the French language that we remember to have seen treating of the morphology and anatomy of toxic drugs, together with the microscopical characteristics of the powders. The illustrations are well executed and accurate.

The drugs are arranged according to families. Besides the usual poisonous vegetable drugs, some of the poisonous fungi and cantharides are also considered. With the splendid facilities and the spirit of research that has dominated French pharmaceutical education, one wonders that a work of this kind did not appear earlier.

LONDON BOTANIC GARDENS. By Pierre Élie Félix Perrédès.

This pamphlet of 99 pages is a reprint from this JOURNAL of a series of papers contributed by the author in 1905 and 1906. It is the sixty-second paper representing original work which has come from the Wellcome Chemical Research Laboratories. All of these papers are of a high order of merit and are contributions to the science of pharmacy. Dr. Power, as director of the Research Laboratories, has shown what research must mean, and for any laboratory in pharmacy to call itself a research laboratory is a misnomer unless investigations are carried on. That the work emanating from the Wellcome Research Laboratories is appreciated is shown by the awards at the Milan Exposition (see this JOURNAL, June, 1907, p. 298).

The pamphlet gives the history and description of Kew Gardens, The Royal Botanic Society's Gardens in Regent's Park, and the Chelsea Physic Garden. It is illustrated with thirty-one full-page plates, which are admirably executed. The book is of interest to botanists and pharmacists alike. The feature which makes it of special interest to pharmacists is the enumeration of the medicinal plants growing in the gardens.

WELLCOME'S PHOTOGRAPHIC EXPOSURE RECORD AND DIARY, 1907. New York, London, Montreal, Sydney, and Cape Town: Burroughs, Wellcome & Co. 50 cents.

This is one of the neatest, most compact and useful books that we have seen, and contains information on the following subjects:

Weights and measures; temperature chart; table for focussing by scale; customs regulations; development by time, machine, tank or stand methods; intensification and reduction; toning with gold, platinum, copper and by the sulphide method; ruled pages for recording negative exposures; ruled pages for recording positive exposures; diary for the year; memoranda pages; monthly light tables, giving the relative value of the light at all hours of the day and throughout the year; Wellcome's exposure calculator. The Exposures at Home and Abroad constitutes a simple but exhaustive treatise on the principles and practice of correct exposure in various countries, illustrated by an entirely new series of examples. Exposures in interior work, in telephotography, in copying, reducing and enlarging, in contact printing by artificial light and for moving objects, are dealt with in special tables.

Plate speed tables give the speeds of over 200 plates and films. They are the fullest published and contain information unobtainable elsewhere.

TABLET MANUFACTURE. Its history, pharmacy and practice. By Joseph R. Wood. Philadelphia and London: J. B. Lippincott Company. 1906. 224 pp. $2.50.

This work, containing twenty-three illustrations, consists of the following chapters: History of Compressed Tablets; Moulded Tablets; General Considerations; Triturating; Mixing, Granulating and Drying; Lubricating; Compressing; Coloring; Construction of Formulas; Treatment of Individual Substances; and a Formulary for Making 7,000 Kinds of Tablets.

It is fortunate for the pharmacist and manufacturer of tablets that this book has been written. It contains much useful information, representing the results of the author's experience, and will save the beginner much time. It also will be found of value to the larger manufacturer, as it contains numerous hints of a practical character that may save time in experimentation.

Taking it all in all, Wood's book is one of a series of monographs that everyone engaged in the manufacture of tablets should have.

THE AMERICAN
JOURNAL OF PHARMACY

OCTOBER, 1907.

CHEMICAL EXAMINATION OF LIPPIA SCABERRIMA, SONDER ("BEUKESS BOSS").[1]

By Frederick B. Power and Frank Tutin.

A South African plant, which is known in its native country as "Beukess Boss," was brought to our notice as being worthy of investigation on account of its reputed medicinal value. It is found in the Orange River Colony, in the neighborhood of Kroonstad, where it is regarded as possessing remarkable hæmostatic properties, together with a slightly tonic and aperient action, and is therefore used in the treatment of hæmorrhoids. Through the kindness of Mr. E. M. Holmes, F.L S., Curator of the Museum of the Pharmaceutical Society of Great Britain, the plant was identified as *Lippia scaberrima*, Sonder, belonging to the family of *Verbenaceæ*. A botanical description of this species of *Lippia* is contained in *Linnaea*, xxiii (1850), 87. Afr. austr.

With regard to the origin or meaning of the vernacular name "Beukess Boss," we have been informed that "Beukess" is the name of an old Dutch family who formerly prepared a decoction of the plant for medicinal use, whereas "Boss" is a corruption of the Boer name of "Bosch," meaning a bush. Hence in time the plant became known as "Beukess Boss" or "Beukess Bush."

A number of species of the genus *Lippia* have heretofore attracted attention on account of their aromatic properties, which are due to the presence of essential oils. One of the best known of these is the *Lippia citriodora*, Kunth (*Verbena triphylla*, L'Heritier), the so-called

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[1] Translated from a communication to the *Archiv der Pharmacie*, 1907, 245, pp. 337-350, from the Wellcome Chemical Research Laboratories, London.

"lemon-verbena," which affords the genuine verbena oil (compare Gildemeister and Hoffmann, "Die ætherischen Oele," p. 774, and Beilstein's *Handbuch der org. Chemie, Ergänzungsband*, III, p. 380). Some South American species of *Lippia*, which likewise yield aromatic essential oils, have recently been brought to notice, namely: *L. urticoides*, *L. geminata*, and *L. microcephala* (*Ber. d. deutsch. Pharm. Ges.*, **14**, p. 468).

Podwissotzki (*Pharm. Zeit. f. Russl.*, 1882, **21**, 926) has recorded the results of an examination of the leaves and stems of *Lippia mexicana*, from which on distillation with water he obtained an essential oil possessing a sweet taste, reminding of that of Italian fennel, together with a crystalline, camphor-like substance (m. p. 25-30° C.), designated as *lippiol.* Although one analysis was recorded of this substance ($C = 75{\cdot}81$; $H = 12{\cdot}43$; $O = 10{\cdot}20$ per cent.), the figures are evidently quite inconclusive, and no further evidence was afforded of its composition, nor was its chemical character determined. The presence of a small amount of tannin in the plant was likewise noted.

Maisch (AMER. JOUR. PHARM., 1885, **57**, p. 330), in commenting "on some useful plants of the natural order of Verbenaceæ," stated that he was unable to find any reference in botanical works to a plant bearing the name of *Lippia mexicana*, and therefore expressed the opinion that the material examined by Podwissotzki (*loc. cit.*) was either obtained from the labiate plant *Cedronella mexicana*, Benth., which has been admitted into the Mexican Pharmacopœia under the name of *toronjil*, or that it was *Lippia citriodora*, Kunth (compare also *Proc. Amer. Pharm. Assoc.*, 1876, **24**, p. 772). In the "National Standard Dispensatory," 1905, p. 1630, it is stated that "the drug *Lippia mexicana* is the leaves of *L. dulcis*, Trev., var. *dulcis*, of Mexico and Central America."

EXPERIMENTAL.

The material used in this investigation was specially collected for us in South Africa, and consisted of the air-dried stems and leaves of the plant, which was botanically identified as *Lippia scaberrima*, Sonder. The herb possesses an agreeable aromatic odor, reminding of both lavender and sage.

Test for an Alkaloid.—Twenty-five grammes of the finely ground herb were macerated with Prollius' fluid, and the resulting liquid evaporated. The residue left by the latter, when extracted with acidulated water, gave no reaction with alkaloidal reagents.

Quantitative Estimation of the Tannin.—A quantity (17·3 grammes) of the finely ground herb was extracted with successive small portions of boiling water, and the cold filtered liquid diluted to the measure of 500 c.c. 100 c.c. of this liquid, when evaporated, and the residue dried in a water-oven until of constant weight, yielded 0·5402 gramme of extract; 100 c.c. of the same liquid, after treatment with hide powder, yielded 0·3498 gramme of extract. The amount of substance absorbed by the hide powder was therefore 0·1904 gramme, which would correspond to 5·5 per cent. of *tannic matter* in the air-dried herb.

Extraction with Alcohol.—A quantity (7600 grammes) of the dried herb was extracted by continuous percolation with hot alcohol, and the greater portion of the alcohol removed. The resulting thin extract, which had a dark green color and an aromatic odor, was brought into a large flask and distilled in steam until oily drops were no longer visible in the condenser. There then remained in the distillation flask a quantity of resinous substance (*A*) and a dark-colored aqueous liquid (*B*), which were separately examined.

Examination of the Steam Distillate.

The distillate was a milky liquid, on the surface of which a small quantity of a greenish-yellow essential oil had separated. It was extracted several times with ether, the ethereal liquid washed with water, dried with anhydrous sodium sulphate, and the ether removed. The residual oil was distilled under the ordinary pressure, when it nearly all passed over between 220° and 230° C., and amounted to 19 grammes, corresponding to 0·25 per cent. of the weight of dried herb.

This *essential oil* had a brownish-yellow color, an odor resembling that of the herb, and was distinctly camphoraceous. It was readily soluble in 70 per cent. alcohol, and its solution gave a slight brown color with ferric chloride. It possessed the following constants: d 15°/15° C. = 0·9500; $a_D + 7°36'$ in a 1 dcm. tube.

The aqueous portion of the distillate, from which the essential oil had been removed by means of ether, contained a small amount of a mixture of acids, which was found to consist chiefly of *formic* and *butyric acids.*

Examination of the Resins (A).

The mass of black, tarry resins in the distillation flask was separated from the aqueous liquid, then thoroughly washed with hot water, and dried. It amounted to 275 grammes, corresponding to 3·6 per cent. of the weight of air-dried herb. This crude resin was mixed with purified sawdust, and extracted successively with light petroleum, ether, chloroform, ethyl acetate, and alcohol. All these products were separately examined.

I. Petroleum Extract of the Resins.

This extract, which constituted by far the greater portion of the total resin, was a dark green, soft solid, and amounted to 170 grammes. Having ascertained by a preliminary experiment that it contained nothing of a basic, acidic, or phenolic nature, it was hydrolysed by boiling with an alcoholic solution of 50 grammes of potassium hydroxide. On subsequently removing the alcohol, a dark green mass was obtained, which was mixed with water, and then repeatedly extracted with ether. When shaking with the first portion of ether it was observed that the liquids contained a small amount of a flocculent precipitate. This was removed by filtration, and found to consist largely of the potassium salt of a fatty acid, but the amount of acid (m. p. about 81–83° C.) obtained from it was too small to admit of its being purified. The ethereal extract of the alkaline liquid was washed, dried, and the ether removed, when a semi-solid, yellow residue, weighing 50 grammes, was obtained. This was distilled under 15 mm. pressure, when the following fractions were collected: 140–205°; 205–265°; 265–330° C./15 mm.

Fractions 140–205° and 205–265° C./15 mm.—These fractions were somewhat thick, yellowish oils, but the one of higher boiling point contained a small amount of a crystalline solid. This was collected on a filter, and recrystallized from ethyl acetate, when it was obtained in beautiful leaflets, melting sharply at 59° C.

0·0600 gave 0·1865 CO_2 and 0·0787 H_2O. $C = 84{\cdot}8$; $H = 14{\cdot}6$.

$C_{27}H_{56}$ requires $C = 85{\cdot}3$; $H = 14{\cdot}7$ per cent.

This substance agrees in melting point and composition with the hydrocarbon *heptacosane*, and is doubtless identical with it.

The oily liquid from which this hydrocarbon had been separated was then mixed with the fraction of lower boiling point, and the mixture fractionally distilled under 20 mm. pressure, when it was resolved principally into two fractions, boiling at 145-175° and 200-230° C./20 mm. respectively. Both these fractions were light yellow, fairly mobile oils, possessing a somewhat fragrant odor. The one of lower boiling point (145-175° C./20 mm.) gave on analysis the following result:

0·1130 gave 0·3274 CO_2 and 0·1100 H_2O. C = 79·0; H = 10·8.

$C_{11}H_{18}O$ requires C = 79·5; H = 10·8 per cent.

A portion of this product was boiled with acetic anhydride, the product distilled, and then analyzed.

0·1054 gave 0·2970 CO_2 and 0·0968 H_2O. C = 76·9; H = 10·2.

$C_{11}H_{17} — O — CO — CH_3$ requires C = 75·0; H = 9·6 per cent.

The iodine value of the acetylated product was then determined.

0·2349 absorbed 0·1723 iodine. Iodine value = 73·4.

$C_{11}H_{17} — O — CO — CH_3$, containing one double linking, would have an iodine value of 122·1.

The fraction boiling at 200-230° C./20 mm. gave on analysis the following result:

0·0854 gave 0·2513 CO_2 and 0·0916 H_2O. C = 80·3; H = 11·9.

$C_{14}H_{24}O$ requires C = 80·8; H = 11·5 per cent.

It was then acetylated, and the product distilled and analyzed.

0·1057 gave 0·3006 CO_2 and 0·1041 H_2O. C = 77·6; H = 10·9.

$C_{14}H_{23} — O — CO — CH_3$ requires C = 76·8; H = 10·4 per cent.

0·2045 absorbed 0·1991 iodine. Iodine value = 97·4.

$C_{14}H_{23} — O — CO — CH_3$, containing one double linking, requires an iodine value of 101·6.

These results show that the above fractions did not consist of pure substances, but evidently contained *alcohols* which appear to possess the general formula $C_nH_{2n-4}O$, with one double linking. The viscid substances which usually accompany the phytosterols in small amount possess an odor resembling that of the above-mentioned alcohols, and they are probably similar in character. The amount of these fractions was too small to permit of their further purification.

*Fraction 265-330° C./*15 mm.—This fraction was by far the largest obtained. It almost all passed over above 290° C./15 mm., and, on cooling, solidified completely. It was crystallized three times from ethyl acetate, when a substance was obtained in the form of silky leaflets, melting at 68° C.

0·0757 gave 0·2356 CO_2 and 0·0986 H_2O. C = 84·9; H = 14·5.

$C_{31}H_{64}$ requires C = 85·3; H=14·7 per cent.

This substance was thus identified as the hydrocarbon *hentriacontane.*

The first mother liquors from this hydrocarbon were of a dark brown color, and, after standing for some days, deposited a quantity of a substance in the form of crystalline plates. This was separated by filtration, and recrystallized from ethyl acetate containing a little dilute alcohol, when it was obtained in handsome plates, which melted at 134° C., and gave with acetic anhydride and sulphuric acid the color reaction characteristic of the phytosterols.

0·0970, heated at 105° C., lost 0·0048 H_2O. $H_2O = 4·9$.

0·0922 of anhydrous substance gave 0·2813 CO_2 and 0·0978 H_2O. $C = 83·2$; $H = 11.8$.

$C_{27}H_{46}O, H_2O$ requires $H_2O = 4·5$ per cent.

$C_{27}H_{46}O$ requires $C = 83·9$; $H = 11·9$ per cent.

This substance was apparently identical with the *phytosterol* obtained from the fatty oil of the seeds of *Gynocardia odorata*, R. Br. (*Jour. Chem. Soc.*, 1905, **87**, p. 898), as a mixture of the two substances melted at the same temperature (134° C.) at which each separately fused.

Maurenbrecher and Tollens (*Ber. d. deutsch. chem. Ges.*, 1906, **39**, p. 3581) have noted a color reaction, first observed by Rauchwenger and Neuberg, which is stated to differentiate between cholesterol and the phytosterols, and is conducted as follows:—A small portion of the substance to be tested, together with a trace of rhamnose, is dissolved in 1·5 c.c. of absolute alcohol, and concentrated sulphuric acid then cautiously added, when, if the substance be cholesterol, a raspberry-red color is produced at the junction of the two liquids, and afterwards extends throughout the whole. According to Rauchwenger and Neuberg, this reaction is not afforded by phytosterol. It was observed, however, by Maurenbrecher and Tollens (*loc. cit.*) that the substance isolated by them from cacao butter, although having the melting point (137° C.) and other characters of a phytosterol, gave the above-mentioned reaction, and they were therefore unable to decide whether this was not due to some adhering cholesterol. In order to ascertain the value of this test, we have applied it to pure cholesterol (m. p. 144–147° C., from Schuchardt), to the phytosterol from the species of *Lippia* under examination, to that from Gynocardia oil, and also to "rhamnol," $C_{20}H_{34}O$ (m. p. 135–136° C.),—the phytosterol occurring in Kô-sam seeds (*Pharm. Jour*, 1903, **71**, p. 186) and in cascara sagrada (*Proc. Amer. Pharm. Assoc.*, 1904, **52**, p. 299), when a precisely similar color was observed in every case. Furthermore, it was ascertained that the color was produced equally well in the absence of the trace of rhamnose. Since making these comparative tests, we have observed that similar experiments have been conducted by Ottolenghi (*Atti R. Accad. Lincei*, 1906 [V], 15, i, 44–47, and *Jour. Chem. Soc. Abstr.*, 1906, **90**, ii, p. 311), and with the same results. This test must therefore be declared valueless as a means of distinguishing between cholesterol and the phytosterols.

The alkaline, aqueous liquid, from which the above-described alcohols and hydrocarbons had been removed by means of ether, was then concentrated, acidified with sulphuric acid, and distilled in steam. The distillate contained a small quantity of an oily acid, which was extracted with ether and converted into its potassium salt, and from the latter six fractions of silver salt were successively precipitated. These silver salts were dried in a vacuum, and analyzed.

1st	fraction,	0·2703	gave	0·1396 Ag.	Ag = 51·6
2d	"	0·3047	"	0·1585 Ag.	Ag = 52·0
3d	"	0·2830	"	0·1474 Ag.	Ag = 52·1
4th	"	0·2509	"	0·1306 Ag.	Ag = 52·1
5th	"	0·1887	"	0·0988 Ag.	Ag = 52·2
6th	"	0·0947	"	0·0498 Ag.	Ag = 52·6

$C_5H_9O_2$ Ag requires Ag = 51·7 per cent.
$C_4H_7O_2$ Ag " Ag = 55·4 " "

The acid removed by ether from the steam distillate therefore consisted essentially of a *valeric acid*, and, on examining the aqueous liquid from which it had been separated, it was found to contain some *formic acid* together with a little *butyric acid.*

Isolation of a New Crystalline Alcohol, Lippianol, $C_{25}H_{35}O_3$ — OH.

The liquid in the distillation flask, from which the above-described volatile acids had been obtained by steam distillation, was shaken with ether, when it was observed that a small quantity of a dark green substance remained undissolved. This was collected on a filter and dried on a porous tile, after which it was dissolved in ethyl acetate and treated with animal charcoal, when, after filtering the liquid, a substance separated in the form of colorless needles. The examination of this substance is described below, as a further quantity of it was subsequently obtained.

The ethereal liquid, from which the above-mentioned solid had been removed, was separated from the aqueous liquid, washed, dried and evaporated. The residue, which consisted of a dark green, sticky mass, was treated with several portions of warm, light petroleum to remove the fatty acids it contained, the residual green, resinous product mixed with a small amount of warm ether, and then allowed to stand. At the end of a few days it had deposited a quantity of a granular solid, and this was separated from the green, uncrystallizable syrup. After solution in alcohol, purification with animal charcoal, and several recrystallizations, this substance was obtained in the form of handsome, white needles, which were found to be identical with those above mentioned. This substance is not an acid, as it was unacted upon by aqueous alkalies. When boiled with acetic anhydride it gave an acetyl derivative, which was obtained in the form of an uncrystallizable syrup. It is evident, therefore, that it is of an alcoholic nature, and, as it is not identical with any substance hitherto described, the name *Lippianol*[1] may appropriately be assigned to it.

Lippianol is sparingly soluble in alcohol, and very sparingly so in ethyl acetate, but crystallizes from both these solvents in colorless needles, which melt, with decomposition, at 300–308° C.

0·0861 gave 0·2361 CO_2 and 0·0712 H_2O. $C = 74·8$; $H = 9·2$.
0·0873 " 0·2391 CO_2 " 0·0724 H_2O. $C = 74·7$; $H = 9·2$.
$C_{25}H_{36}O_4$ requires $C = 75·0$; $H = 9·0$ per cent.
$C_{25}H_{38}O_4$ " $C = 74·6$; $H = 9·5$ " "

It is evident from these analyses that lippianol possesses the empirical formula $C_{25}H_{36}O_4$. It is optically active, and a determination of its specific rotatory power gave the following result:

0·1123, dissolved in 25 c.c. of absolute alcohol, gave $a_D + 0° 35'$ in a 2 dcm. tube, whence $[a]_D + 64·9°$.

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[1] The designation *Lippianol* has been adopted in view of the fact that, as already noted, the name *Lippiol* has previously been given by Podwissotzki (*loc. cit.*) to a crystalline substance of indefinite character and composition obtained by the distillation of the so-called *Lippia mexicana.*

As already stated, lippianol is unaffected by aqueous alkalies, but, when boiled with a strong solution of potassium hydroxide containing some alcohol, it forms a compound with the alkali which does not separate even after the removal of the alcohol, and, on acidifying this liquid, the lippianol is precipitated unchanged. Although obtained from that portion of the resins which was extracted by light petroleum, lippianol is quite insoluble in this solvent, and cannot, therefore, have occurred in the plant in a free state. The fact that it was not obtained in association with the other alcohols already described, is owing to its above-mentioned property of forming a compound soluble in water when treated with alcoholic potash. The amount of lippianol obtained (3·5 grammes) is equivalent to about 0·05 per cent. of the weight of the air-dried plant.

Methyl Lippianol, $C_{25}H_{35}O_3 — OCH_3$.—As the acetyl derivative of lippianol was unsuitable for the purpose of ascertaining the number of hydroxyl groups contained in this alcohol, and as a determination by Zeisel's method showed the absence of methoxyl groups, about 1 gramme of the lippianol was completely methylated by treatment with sodium methoxide and methyl iodide. The number of hydroxyl groups present in the original substance was then ascertained by determining the percentage of methoxyl in the resulting derivative.

Methyl lippianol crystallizes from dilute alcohol in colorless needles, which melt, with decomposition, at about 260° C. An estimation of the methoxyl groups, by means of Perkin's modification of Zeisel's method (*Jour. Chem. Soc.*, 1903, **83**, p. 1367), gave the following result:

0·3034 gave 0·1725 AgI. $CH_3O = 7·5$.
$C_{25}H_{35}O_3 — OCH_3$ requires $CH_3O = 7·5$ per cent.

Lippianol is therefore a monohydric alcohol.

Examination of the Non-volatile Acids.

The light petroleum liquid containing the non-volatile fatty acids, which was separated from the product from which the lippianol was obtained, as above described, was washed, dried and evaporated. The residue, which weighed ·50 grammes, was distilled under a pressure of 15 mm., when it passed over between 235° and 265°, and crystallized on cooling. It was then dissolved in a little warm ethyl acetate, and the solution allowed to cool, after which the crystalline acid which had separated was collected on a filter. These crystals first melted at 53° C., but after repeated crystallization from ethyl acetate the melting point was raised to 74° C., after which it remained constant.

0·1015 gave 0·2844 CO_2 and 0·1176 H_2O. $C = 76·4$; $H = 12·9$.
$C_{20}H_{40}O_2$ requires $C = 76·9$; $H = 12·8$ per cent.

It is evident that this substance was *arachidic acid.*

The mother-liquors from this arachidic acid were concentrated, when a further quantity of crystals was obtained. This was repeatedly recrystallized from a variety of solvents, but the melting point could not be raised above 54° C. It had the appearance of a mixture, and an analysis indicated that it consisted of *palmitic* and *stearic acids.*

The original filtrate from these solid acids contained a considerable quantity of an oil, which was found to be a mixture consisting largely of unsaturated acids. It was, therefore, converted into the lead salts, and the latter treated with ether and filtered. The ethereal solution thus obtained was shaken with concentrated hydrochloric acid, the mixture filtered, and the separated ethereal liquid washed, dried and evaporated. The unsaturated acids were thus obtained as a light yellow oil, which, on distillation under 15 mm. pressure, passed over between 225° and 245° C.

0 0969 gave 0·2742 CO_2 and 0·1001 H_2O. $C = 77·2$; $H = 11·5$.
$C_{18}H_{32}O_2$ requires $C = 77·1$; $H = 11·4$ per cent.
0·3270 absorbed 0·5215 iodine. Iodine value = 159·5.

An acid of the formula $C_{18}H_{32}O_2$, containing two double linkings, requires an iodine value of 181·4.

From these results it is evident that the unsaturated acids consisted largely of *linolic acid*, or of an acid isomeric with the latter.

II. Ether Extract of the Resins.

The portion of the resins soluble in ether was dark green in color, and amounted to 54·5 grammes. It contained a small quantity of a substance which was only very sparingly soluble in ether, and which, when dissolved in warm ethyl acetate, and the solution cooled, separated in the form of a white, amorphous powder, which melted and decomposed at 210–213° C.

The ethereal solution of the readily soluble portion of the extract, which was by far the greater part, was then shaken with a solution of sodium carbonate. This treatment caused the separation of the sodium compound of an acidic resin, in the form of a dark green, slimy mass, which was sparingly soluble in water. On treatment with sulphuric acid, this sodium compound yielded a quantity (40 grammes) of a resin, which, after solution in ethyl acetate, and purification with animal charcoal, was obtained in the form of an uncrystallizable, light-colored varnish. The ethereal liquid which had been extracted with sodium carbonate solution was treated with a 10 per cent. solution of sodium hydroxide, but this afforded only a small quantity of a tarry sodium compound, from which nothing crystalline could be obtained. The portion of the ether extract of the resins devoid of acidic properties still remained dissolved in the ether, and this solution was therefore washed, dried and evaporated. The dark green, resinous residue was allowed to stand for a few days, when it deposited a very small quantity of a granular substance, which, when separated from its solution in ethyl acetate, was yellowish in color, and apparently minutely crystalline. As this substance possessed the properties of a hydrocarbon, it was warmed on a water-bath with concentrated sulphuric acid during half an hour, in order to destroy any resinous impurities contained in it. After this treatment the substance was recovered, and was apparently in a state of greater purity, as it was then colorless. It melted at 80° C., and was doubtless a hydrocarbon of high molecular weight, probably possessing a formula approximating to $C_{39}H_{80}$.

III. Chloroform Extract of the Resins.

This was a dark green, soft solid, and weighed 24 grammes. It was redissolved in chloroform, and extracted with a solution of sodium carbonate. On acidifying the alkaline solution thus obtained, a brown powder was precipitated, which was collected and dried on a porous tile. This substance was then dissolved in alcohol, and purified by means of animal charcoal, when it was obtained in beautiful yellow needles, which melted and decomposed at about 268° C. The total amount obtained was less than 0·1 gramme, but it was analyzed with the following result:

0·0518 gave 0·1110 CO_2 and 0·0265 H_2O. $C = 58·4$; $H = 5·7$.
$C_{22}H_{26}O_{10}$ requires $C = 58·7$; $H = 5·8$ per cent.

The chloroformic liquid, after having been shaken with a solution of sodium carbonate, was treated with potassium hydroxide solution, and this caused the separation of a tarry potassium compound, but nothing crystalline could be obtained from it.

IV. Ethyl Acetate Extract of the Resins.

This was very small in amount, but afforded a minute quantity of a crystalline substance which melted at 123° C.

V. Alcohol Extract of the Resins.

This was a black resin, and amounted to 25 grammes. Nothing crystalline could be obtained from it.

Examination of the Aqueous Liquid (B).

The dark-colored, aqueous liquid which had been decanted from the cake of resins, as previously described, was extracted ten times with ether, and the yellow, ethereal liquid shaken with a solution of sodium carbonate. The alkaline liquid thus obtained was acidified with sulphuric acid, when a yellow solid was precipitated. This was collected on a filter, and crystallized from alcohol, when it was obtained in the form of yellow needles, possessing a silky lustre. This substance melted and decomposed at about 267° C., and on analysis afforded the following results:

0·0756 gave 0·1570 CO_2 and 0·0344 H_2O. $C = 56·6$; $H = 5·0$.
0·0803 " 0·1655 CO_2 " 0·0362 H_2O. $C = 56·4$; $H = 5·0$.

The percentage composition of this substance agrees within the limits of experimental error with that required for several possible empirical formulæ, but, as less than 0·3 gramme of the substance was obtained, it is impossible to decide which of these formulæ should be assigned to it. The substance does not contain nitrogen, and, so far as could be ascertained, it is not identical with any substance heretofore described. The ethereal liquid from which this substance had been removed by shaking with a solution of sodium carbonate only contained a small quantity of green resinous matter.

The aqueous liquid, which had been extracted with ether, was then treated with a slight excess of basic lead acetate, and the copious yellow precipitate collected on a filter. A portion of this precipitate was suspended in water and decomposed with hydrogen sulphide; but on concentrating the filtrate only a dark-colored tarry mass was obtained, from which nothing crystalline could be isolated.

The filtrate from the basic lead acetate precipitate was freed from lead by means of hydrogen sulphide, and, after filtering, was concentrated under diminished pressure. The dark brown syrup thus obtained reduced Fehling's solution, and on treatment with phenylhydrazine acetate gave a small quantity of an osazone melting at 210° C. On allowing the syrupy liquid to stand for some time, a considerable quantity of crystals separated, but these were found to consist only of potassium and calcium sulphates. When warmed with potassium hydroxide it evolved ammonia, but did not give any precipitate with alkaloidal reagents. The syrup was therefore mixed with prepared sawdust, and the mixture dried in a vacuum over sulphuric acid, after which it was extracted in a Soxhlet apparatus with ethyl acetate. This removed a quantity of an uncrystallizable syrup, which did not reduce Fehling's solution until after it had been boiled with a dilute mineral acid, a behavior which indicated the possible presence of a glucoside. A quantity of the syrup removed by ethyl acetate was, therefore, diluted with an equal volume of water, 10 per cent. sulphuric acid added, and the mixture gently heated. When the temperature reached about 50° C. a dark-colored, flocculent substance was precipitated, which soon coalesced to a black resin. The mixture was then heated to the boiling point, diluted with water, and distilled in steam, when a slightly turbid distillate was obtained, from which ether removed a few drops of a liquid having a strongly aromatic odor. The distillation flask then contained a hard, black resin, which was insoluble in all the usual solvents and in alkalies, together with a brown aqueous liquid containing sugar, and this, after the removal of the sulphuric acid, afforded an osazone melting at 211° C. It was evident, therefore, that the ethyl acetate extract of the aqueous liquid contained a *glucoside* which is readily hydrolyzed by sulphuric acid; but the only definite hydrolytic product obtained was a sugar, which appeared to consist chiefly of optically inactive glucose.

SUMMARY.

This investigation has shown that *Lippia scaberrima*, Sonder, contains, besides resins and other amorphous products, the following substances:

(1) About 0·25 per cent. of an aromatic essential oil.

(2) Heptacosane, $C_{27}H_{56}$.

(3) Hentriacontane, $C_{31}H_{64}$.

(4) A very small amount of a paraffin, melting at 80° C.

(5) Phytosterol, $C_{27}H_{46}O$ (m. p. 134° C.).

(6) Unsaturated alcohols, possessing the probable general formula $C_nH_{2n-4}O$, and containing one double linking.

(7) Formic and butyric acids in a free state.

(8) Esters of formic, butyric, valeric, arachidic, linolic and other acids.

(9) A new, colorless, crystalline substance, *lippianol*, $C_{25}H_{36}O_4$, which has the characters of a monohydric alcohol, and was obtained in an amount of about 0·05 per cent.

(10) Two *yellow crystalline substances* in very small amount, both of which melt at about 267°, and also a trace of a crystalline substance melting at 123° C.

(11) A *glucosidal substance* which could not be isolated, and which, besides glucose, yielded only indefinite hydrolytic products.

(12) Glucose (chiefly the inactive form).

The authors desire to express their thanks to Mr. H. W. B. Clewer for his assistance in this investigation.

FIFTY-FIFTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

By Florence Yaple.

The fifty-fifth annual meeting of the American Pharmaceutical Association was held in New York City, September 2d to 7th, the Hotel Astor, Times Square, being the headquarters of the association.

For various reasons it was anticipated that the meeting would be of more than ordinary interest, as the holding of the convention in the metropolis, with all of its attractions, after a lapse of forty years; the important subjects to be brought up for discussion, including the educational problem in pharmacy; the relation of the pharmaceutical and medical professions, or, perhaps more properly, the relation of the American Medical Association and the American

Pharmaceutical Association, and the reorganization of the latter body.

Whether or not the results accomplished equaled the anticipations of the more sanguine members, this much can be said: The educational and legislative problems were considered in a manner, which, while not radical, yet indicates progress; and it is safe to assume that the two national associations of pharmacists and physicians never had a better understanding of their true relation and mutual needs, and that the time was never more auspicious for the accomplishment of tangible results through their united efforts.

FIRST GENERAL SESSION.

The first general session was called to order on Monday afternoon, September 2d, at 3 o'clock, by the president, Leo Eliel, of South Bend, Ind. The announcement made by the local secretary, Thomas P. Cook, that Mayor McClellan could not be present to welcome the members to the city caused considerable disappointment to some, which, however, was almost forgotten as the hearty words of welcome were spoken by Mr. Cook and other local members. Dr. William C. Alpers, speaking on behalf of the local entertainment committee, extended a hearty welcome to all—a welcome, he said, which came from the hearts of the 2,000 pharmacists of New York City.

Dr. Solomon Solis Cohen, of Philadelphia, delegate from the Section on Pharmacology of the American Medical Association, said, after extending to the members fraternal greetings, that for the past few years physicians and pharmacists have set themselves to correct some of their mutual errors. He said that it is the province of neither to criticise the other, but mutually to unite to correct these errors. Referring to the subject of pharmaceutical specialties, such as serums, certain galenicals and alkaloids, Dr. Cohen said that while it is recognized that these can be made better on a large scale and by those having special facilities, and for which due credit is given the manufacturers, the medical profession also recognize the necessity of the pharmacist as a scientific man.

On the other hand, he declared that he had nothing to say against trade, trade being the life of the country, and pointed out that business men themselves should resent the implication that business and ethics are incompatible.

Continuing, Dr. Cohen said that the dependence of the patient upon the physician is reflected by the dependence of the physician upon the pharmacist, and that apart from the physiologic method now much in vogue in the treatment of disease, physicians depend upon pharmacists to furnish that which exists in nature and that which art alone can produce. He therefore claimed that the members should not get together for recrimination, but to work for the inseparable progress of pharmacy.

Among the other delegates who spoke were Edward Williams, of Madison, Wis., delegate from the National Association of Retail Druggists; E. M. Roehrig, representing the Public Health and Marine Hospital Service, and Paul J. Waldner from the U. S. Navy.

Dr. H. W. Wiley, of the U. S. Department of Agriculture, was welcomed as an active member of the association, and in responding touched upon the subject of the efforts at improvement in pharmacy and medicine. He said that if it were not for the moral sentiment of the people no reforms could be effected; that every law which does not have moral sentiment back of it is a dead letter. He said that the Food and Drugs Act had been supported by the great organizations of the country, and that the American Pharmaceutical Association was one of the first to give encouragement to the work. He affirmed that trade is ethical, and in answer to the question, What is the life of business? replied, honor. Continuing, he said that the Government had no desire to punish any one, but only to control those who are dishonest, for the dishonest practices of a few will demoralize business. He said because 98 per cent. do an ethical business, Congress is able to control the 2 per cent. who are not honest.

At the request of President Eliel, Prof. Joseph P. Remington introduced Prof. José Guillermo Diaz, of the University of Havana, Cuba, who recently finished a translation of the U. S. Pharmacopœia into Spanish. Professor Diaz said that in his work in the University he had had occasion to refer to the U.S.P., and that he had translated many paragraphs for the use of his students. He praised the completeness and clearness of the work, and said that the pharmacists of Cuba are looking forward to the publication of the translated edition.

Prof. William M. Searby, of San Francisco, in responding to the addresses of welcome, spoke of the gratitude which the druggists of California, who were victims of the earthquake, feel toward the druggists of the country for their generous assistance.

Thomas F. Main, of New York, chairman of the Committee on Credentials, reported that sixty-one organizations were represented by duly accredited delegates.

PRESIDENT'S ADDRESS.—Vice-president C. S. N. Hallberg occupied the chair while the president read his annual address.

The address contained several recommendations, which for the most part centered around the Pure Food and Drugs Act, and were presented "from the standpoint of the pharmacist in actual practice." The following extracts have been selected as showing the trend of the address:

"Without a doubt, the most important event of the past year was the enactment of the Pure Food and Drugs Act. For the first time since the establishment of this Government, has there been a law put on the national statutes which undertakes to control the truthful branding of foods and medicinal products, at least so far as their contents of certain substances are concerned. This Act is so far-reaching that it will not be possible at this time to venture a prediction as to final results.

"One of the most beneficial and immediate results of the enforcement of the Act will be a recrudescence of that commercial honesty and integrity which is so necessary to establish that perfect faith in all commercial transactions.

"As a natural sequence of this Act, there should be organized a National Department of Health.

"One of the fundamental principles of all civilized countries should be the preservation and care of the public health. . . . This association should re-emphasize its position, as being in favor of such a department, and should appoint a committee to join the American Medical Association, to aid in obtaining the necessary legislation. We should go still further and demand representation in this department, since ours is the first national association to concern itself about public health. Protest against the importance of adulterated drugs and medicine was the immediate cause for the organization of the American Pharmaceutical Association here in this city (New York) in 1851, and its investigation and reform was the most important work during the first decade of its existence.

"State Boards of Health, as at present constituted, do not, in most States at least, present the ideal conditions that should prevail in bodies of this character. There should be at least one pharmacist, one dental and one veterinary surgeon on each and every one of these Boards. State institutions, such as our insane asylums, should have registered pharmacists in charge of their dispensaries. I recommend that proper steps be taken to obtain necessary legislation to bring about such improved conditions in States where such do not now exist."

A recommendation was made to refer the matter relating to the labeling of preparations under the Food and Drugs Act to "the Committee on Legislation, with instruction to try to obtain changes in the Act, so that when an article is labeled with a U.S.P. or N.F. title, it must comply with their standards of purity and strength. The present interpretation of this clause in the Act is clearly wrong and we should not permit it to stand."

The speaker's remarks on the sale of narcotic drugs and cocaine concluded as follows:

"A majority of the victims of drug habits may be laid at the door of a certain class of physicians. The laws, as they are now, only cover the retail drug trade; there is no restrictive legislation so far as the importer, manufacturer, jobber or physician is concerned, excepting that by special provision they are always exempted from such restriction. It is desirable to check the indiscriminate use of drugs of this class, and I would suggest that the Committee on Legislation and Education take this matter up for serious consideration and report as to best methods for obtaining the necessary legislation."

On the subject of board examinations President Eliel said:

"There are in the United States, approximately, taking population into consideration, eight pharmacies and drug stores to one in Continental European countries. Despite this fact, there are those who deprecate the commercialization of the drug business and the fact that in a majority of these stores the practice of pharmacy has become a secondary feature. This enormous overcrowding is due in part to laxity in our laws, not being strict enough in educational and other requirements, also in methods of examinations in vogue by most of the Boards of Pharmacy. Under present laws, in most States, examinations are limited to three days. This is entirely inadequate to determine what a candidate can 'do.' The ordinary methods of examination fall short in determining a candidate's competency. Questions, even with ample time at the disposal of a Board, and the wide range from which they may be selected, are, after all, but a very imperfect test of real knowledge. The present system of examination, making 75 per cent. or more consist of written questions, is entirely wrong. A recent graduate, or one who has 'crammed' from one of the many 'quiz compends,' could pass such an examination, but what could he 'do?' This can not be determined in the short time allotted for such examination. Five days, at least, should be given for the examination and the practical demonstration of the candidates' ability. Of this at least 75 per cent. should consist of laboratory and prescription work. The laboratory work should consist of assay processes, the preparation and standardization of test solutions, also to the application of tests to determine the purity of the various articles submitted. The prescription work should be of a character to test the knowledge as well as the skill. This would make the grade of registered pharmacist much more difficult to reach, but if we ever expect to elevate the practice of pharmacy to a proper professional standard, we will have to proceed along these lines. If the pharmacist hopes to maintain his professional status—and we assume that this is his desire—he must put himself on a level with his co-laborer and ofttimes chief competitor, the physician; higher standards and more rigid examinations are required. I, therefore, urge that this association put itself on record at this time as being in favor of a higher educational standard and more rigid and extended examinations by the Boards of Pharmacy. Also that this association use its best efforts with the different State Legislatures to that effect."

In a series of recommendations which pertained mostly to the internal workings of the association, appeared the following: "I recommend that manufacturers of such articles as aqua ammoniæ, acetic, nitric and other acids, be urged to abandon their archaic methods of branding and to adopt modern methods for stating percentage contents. F., FF., FFF., FFFF., etc., may have conveyed a definite idea as to strength fifty years ago, but to-day are entirely without meaning. Branding by degrees Baumé is also unsatisfactory, as this requires conversion to ascertain the strength.

"We should offer due notice and after a specified time refuse to accept such goods unless properly labeled.

"A great source of annoyance and financial loss to the pharmacist is due to the multiplication of similar preparations by manufacturing houses under different titles; otherwise reputable houses should refrain from such practice.

"This association should enter protest against further abuse of this character."

On the question of revising the U. S. Pharmacopœia under the supervision of the National Government, the president expressed his views as follows:

"Foreign pharmacopœias so revised cannot be compared in any respect with the U.S.P. The conditions under which the U.S.P. is revised are the best for this country. The Government has now representation in the Pharmacopœial Convention through its various medical and drug departments, in its different branches of service. This might be enlarged upon by the Convention electing one of the Government delegates as a member of the Revision Committee. But it is clearly in the interest of all concerned to retain control of the Pharmacopœia under present conditions."

The address was referred to a committee composed of the following members: William H. Zottman, Vermont; Ralph B. Gable, New York; and Charles Holzhauer, New Jersey.

An epitome of the minutes of Council was read by the secretary, Henry M. Whelpley. Among other things noted were: The proposition to elect an honorary president; the election of 320 new members during the year; the increase of the number of members of Council to 28, 7 being added by the American Pharmaceutical Association branches, and the adoption of the report on the Ebert estate, which will add about $4,000 to the funds of the association.

The names of the committees having reports to make being called, Prof. Henry P. Hynson announced that Prof. C. Lewis Diehl had been taken ill in Philadelphia on his way to the meeting, and moved that the association send a telegram of sympathy to him, which motion was unanimously adopted.

The names of the members of the Nominating Committee having been reported, the first session adjourned.

SECOND GENERAL SESSION.

This session, held on Tuesday morning, was devoted to the reading of reports.

The report of the Nominating Committee was accepted and the following officers for the ensuing year were duly elected: President, William M. Searby, San Francisco; first vice-president, Oscar Oldberg, Chicago; second vice-president, H. H. Rusby, New York; third vice-president, O. W. Bethea, Meridian, Miss.; treasurer, S. A. D. Sheppard, Boston; general secretary, Charles Caspari, Jr., Baltimore; reporter on the Progress of Pharmacy, C. Lewis Diehl, Louisville; new members of Council: Leo Eliel, South Bend, Ind.; E. G. Eberle, Dallas, Tex.; and F. C. Godbold, New Orleans.

For honorary president the association unanimously elected P. C. Candidus, of Mobile.

The report of the treasurer, S. A. D. Sheppard, for the fiscal year, July 1, 1906, to July 1, 1907, showed that the receipts, not including money for funds, were $19,507.49, and the expenses, $14,661.69, the receipts thus exceeding the expenses by $4,845.80.

After presenting his report, Mr. Sheppard announced that he would retire from office next year, thus giving the Association a year to consider the question of his successor.

Secretary Caspari read a report covering the work of the Committee on Publication, which contained the statement that the unprecedented number of 24,000 copies of the National Formulary had been printed during the past year.

In his report as editor of the American Pharmaceutical Association Bulletin, C. S. N. Hallberg stated that 40,000 copies of the convention number of the Bulletin had been distributed.

Chairman A. B. Lyons, of the Committee on the United States Pharmacopœia, being absent, the report of the committee was read by E. Fullerton Cook, of Philadelphia.

A report which Prof. Joseph P. Remington had presented as chairman of the Revision Committee to the Board of Trustees of the United States Pharmacopœia, at a meeting held on the Friday previous, was also submitted at the suggestion of the latter body. In this report Professor Remington referred briefly to the discussion in one of the drug journals upon the subject of "Government Revision," and said that "while the replies which have been sent to the journal have not been sufficient to warrant the expression of a definite opinion, it would seem that a majority of the writers are not favorable to a change in the general plan."

In this connection he quoted from the address of the president of the British Pharmaceutical Conference at the late annual meeting in Manchester, in which he said a tribute was paid to American pharmacy and the pharmacopœial plan approved.

The main part of the report was devoted to a consideration of the conditions and changes brought about by the passage of the Pure Food and Drugs Act, and the adoption of the Pharmacopœia as a legal standard.

In discussing future methods of revision, the speaker said that "the present method of revision by correspondence is cumbrous, and some better means of communication between the members must be devised." The advantages of the present plan were outlined as follows:

> (1) The committee is representative of various sections of the country. (2) There has not been the slightest intimation from any quarter that the committee were influenced either directly or indirectly by pecuniary reward. . . . (3) A committee of revision constituted like the present one is much nearer and closer to sources of information, and the education, training and life-work of such a committee fit them especially for the work. If the present committee had been able to procure in 1902 and 1903 the information that was freely tendered by manufacturers and others in 1906, not only would there have been much time saved, but there would have been no necessity for sending out "Additions and Corrections." (4) It is significant that while some European nations are advocating a more popular and democratic method of revising their pharmacopœias, there is some talk in this country of changing the present method and placing the whole work in the hands of the Government.

In concluding his remarks on this subject, Professor Remington spoke as follows:

> The manufacturers and pharmacists as a rule are satisfied with the latest issue of the Pharmacopœia. They have incurred great expense to comply with its standard, and rapid and continuous changes in the standards are ill-advised and have a tendency to disturb values and cause great losses. That the Pharmacopœia should be revised oftener than every ten years must be apparent to all, and this subject must claim the serious attention of the next Pharmacopœial Convention; but, on the other hand, a constant tinkering with the standards should be avoided. That the medical profession will take vastly more interest in the revision of the next Pharmacopœia can be safely predicted; that it will be necessary to both medicine and pharmacy to work harmoniously together is also a necessity, and that any defects in the present plan of revision can and will be remedied in the future, is the sincere belief of the chairman of the Committee of Revision.

Among the other reports presented were the following: Report of the Committee on National Formulary, C. Lewis Diehl, chairman, read by Henry P. Hynson; the report of the Committee on the Status of the Military Pharmacist, George J. Seabury, chairman, read by the secretary; report of the Committee on Transportation, Charles Caspari, chairman; report of the Committee on Local Branches, C. S. N. Hallberg, chairman, read by Otto Claus; the report of the General Committee on Membership and Reception, William B. Day, Chairman, read by Secretary Caspari, contained a suggestion that the committee should consist of one member from each State.

The report of the historian, Edward Kremers, showed that considerable interest is being taken in the proposed pharmacy exhibit in the new National Museum at Washington, and that a large space will be allotted to it.

William M. Searby, chairman of the Committee on Weights and Measures, stated that there is not much interest in this subject at present.

The recommendation of the Committee on Time and Place of Meeting, made through its chairman, Francis G. Schachleiter, that Hot Springs be chosen as the next place of meeting, was approved.

A temporary report on the plans for the reorganization of the association was submitted by the chairman of the committee, C. S. N. Hallberg. (See page 472.)

THIRD GENERAL SESSION.

The final general session was held on Saturday morning. The minutes of the three previous meetings of the Council were read by Secretary Whelpley, following which was considerable discussion on the subject of the manner in which authors of text and other books should be allowed to use the matter contained in the National Formulary.

The Council proposed a method whereby the members of the association would have a chance to vote directly by mail for candidates for president and vice-president, and also that the reporter on the Progress of Pharmacy, the treasurer and the general secretary be elected annually by the Council.

Of the other items reported in the minutes of Council, the following are of general interest: The second week in September, 1908, was chosen as the time for the Hot Springs meeting; the total number of new members of the association elected during the year was 350, making a total membership of 2,200; J. H. Beal and H. M. Whelpley were respectively chosen president and secretary of the Council for the ensuing year.

The Procter Monument Committee, through its chairman, Dr. John F. Hancock, of Baltimore, reported progress in the work. He said that the work would require time and the co-operation of all the various pharmaceutical bodies, and spoke of the educational influence on the younger element in pharmacy by keeping before them the work of such a man as Procter. In concluding his remarks, Dr. Hancock said we build monuments to our soldiers, to those who were prominent in war, and should also build monuments to those whose business it is to save the lives of the people. He then called upon the secretary of the committee, Henry Kraemer, of Philadelphia, who presented a formal report of the work. Professor Kraemer prefaced his remarks by the statement that the movement originated several years ago as the sequel of a suggestion made by their late fellow-member, Albert E. Ebert, and that the work had been carried on by the association. The report showed that about $3,500 has been collected by the committee, and contained the proposal to turn over the funds collected each year by the committee to the association at the time of the annual meeting. The request was also made to have the committee enlarged, and this was granted, upon motion of Dr. Hancock. A motion made by S. A. D. Sheppard to accept the funds from the committee each year and to instruct the Financial Committee as to their proper care, was adopted.

The report of the Committee on Reorganization was submitted by the chairman, and by vote of the association placed upon the records for action next year.

REPORT OF THE COMMITTEE ON REORGANIZATION.

The committee begs to submit the following draft of the changes and additions to the Constitution of the American Pharmaceutical Association.

CONSTITUTION.

Article I. No change.
Article II. No change.

THE COUNCIL.

Article III. There shall be an administrative body known as the Council of the American Pharmaceutical Association. It shall be composed of delegates representing local branches, the State Pharmaceutical Associations, and the several sections of this association, as hereinafter provided in the by-laws. It shall represent the delegated power of the association. It shall elect the general officers of the association and a board of six trustees, and shall transact all the general business of the association of a public, professional, scientific, or of other character that is not otherwise provided for. The trustees shall be members of the Council without the right to vote.

Article IV. The officers of the association shall be an honorary president, a president, three vice-presidents, a general secretary, a treasurer, a reporter on the Progress of Pharmacy, and an editor and local secretary, all of whom shall be elected annually by the Council. They shall hold office until their successors are elected.

Article V. Board of Trustees. The Board of Trustees shall have charge of the property and of the financial affairs of the association. Two trustees shall be elected annually by the Council, each to serve a period of three years. The president shall be a member of the Board of Trustees, and the general secretary and treasurer shall be members of the Board of Trustees without the right to vote.

Article IV. Change to Article VI.

Article V. Change to Article VII.

The Committee on Reorganization: M. I. Wilbert, C. S. N. Hallberg, Caswell A. Mayo, Eugene G. Eberle and Edward Kremers.

Reports were also received from the Committee on Publicity, E. H. Gane, chairman; and the Committee on Public Press, Francis B. Hays, chairman.

The report of the Committee on Ebert Memorial, W. M. Searby, chairman, was referred to the Council.

A resolution proposed by Thomas D. McElhenie, of Brooklyn, to the effect that it is the sense of the association that medical schools should teach and make more use of the U. S. Pharmacopœia, either as a text-book or reference book, was adopted.

After the installation of the new officers, President William M. Searby appointed delegates to the annual meetings of the N. A. R. D. and the N. W. D. A., and a rising vote of thanks was extended to the Local Entertainment Committee, with special mention of the arduous labors of Thomas P. Cook, as chairman, and also to the pharmacists of New York and their ladies, and the German Apothecaries' Society.

Some other matters were also considered, after which the meeting was declared adjourned.

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

H. A. B. Dunning, chairman; Joseph Weinstein, secretary; Franklin M. Apple, associate.

This Section held two sessions, one Tuesday afternoon and one Tuesday evening. No less than twenty-seven papers were on the programme, and these for the most part were of a fair order of merit.

Chairman Dunning's address was highly creditable, and showed above all else that the most capable pharmacist is the one who appreciates the value of scientific knowledge and its application to his art. That Mr. Dunning holds to the same view was shown in the opening paragraph of his address, where he expressed the view that the work of the Scientific Section might with advantage be more closely co-ordinated with that of the other sections, and thus questions arising in practice could be studied by those more especially qualified for scientific work. He said that interesting problems were constantly coming forward in the practice of pharmacy, and suggested that these be investigated according to pharmaceutical methods, and then in case they proved difficult of solution, handed over to the scientific section, together with the results previously obtained. Among the examples given of such problems were the following: The question as to why equal weights of different chemicals increase volume unequally when dissolved in water; one as to why boric acid can be satisfactorily titrated in the presence of glycerin; the solvent action of certain chemicals upon other chemicals, and the liquefaction of certain substances in the presence of others, and still others of a more practical character.

The following papers were read:

A FEW POINTS ON TOXICOLOGY FOR THE PRACTICAL PHARMACIST.

By Joseph Weinstein.

The author advocated that the pharmacist should be trained, as in European colleges, to give first aid to the injured. With reference to poisons, he said that in order to give first aid it is not always necessary to know the specific poison; that poisons belong to two classes, sedative and stimulant, the symptoms and treatment varying according to these two classes.

SODIUM OLEATE: SOME COMMERCIAL PREPARATIONS CONTAINING IT.

By M. I. Wilbert.

LIQUID SOAP: AN ECONOMICAL FORMULA.

By M. I. Wilbert.

The writer pointed out the advantages of the liquid form of soap over the cake form, but said that the cost of the ethyl alcohol required in its manufacture is the chief objection to its use. In carrying on experiments to minimize the quantity of ethyl alcohol, the author found that a mixture of soda and potash soaps is much more soluble in water and more stable when diluted than either one alone. The following formula and directions were given:

Sodium hydrate, 40 grammes; potassium hydrate, 40 grammes; cotton-seed oil, 500 c.c.; alcohol, 250 c.c.; and distilled water, a sufficient quantity to make 2,500 c.c.

"In a suitable container, preferably a glass-stoppered bottle, dissolve the potassium hydrate and the sodium hydrate in 250 c.c. of distilled water, add the alcohol, and then add the cotton-seed oil in three or four portions, shaking vigorously after each addition. Continue to agitate the mixture occasionally, until saponification has been completed. Then add the remaining portion of distilled water and mix."

THE EYES AND HANDS IN DISPENSING: TECHNIQUE.

By Henry P. Hynson.

The speaker stated that many students were not only unable to use their hands dexterously, but were unable to differentiate closely with their eyes, as in distinguishing a clear solution from a cloudy one, and differences in the size and color of objects. He said that much could be done by training along these lines to increase the skill of the dispenser.

SOLID OPODELDOC AND OTHER OFFICIAL PREPARATIONS.

By H. A. B. Dunning.

Having his attention called to the fact that the linimentum saponato-camphoratum, or solid opodeldoc of the National Formulary, is an opaque preparation, and does not distribute as readily when applied to the skin as Squier's opodeldoc, the author carried on a series of experiments with the object of obtaining a product with these qualities, and evolved the following formula and directions:

Sodium carbonate, monohydrated, ·5; stearic acid, 2·5; water, 5·0; alcohol, 50·0; camphor, 1·25; oil of thyme, ·15; oil of rosemary, ·3; and stronger ammonia water, 2·5.

Dissolve sodium carbonate in the water by heat, add 10 c.c. alcohol and the stearic acid, warm until effervescence has ceased and perfect solution is effected, add balance of alcohol, and when not too warm, the oils and ammonia water, filter into bottles, closely stopper and set aside to cool.

A number of notes on official preparations were also submitted.

HINTS ON THE COMPOUNDING OF GLYCERIN, BENZOIN AND ROSE WATER.

By F. M. Apple.

The author advised against the extemporaneous preparation of this mixture, and gave the following formula:

Tincture of benzoin, f℥iij; glycerin, f℥viij; and rose water sufficient to make Oj.

Add the tincture of benzoin to four fluidounces of the glycerin, agitating the mixture thoroughly after each addition. Then add sufficient rose water, in small quantities and with thorough agitation, to make eight fluidounces. Strain the mixture through a straining cloth having a very fine mesh, rubbing the magma through the strainer with a glass rod or bone spatula. Repeat the straining three or four times. Allow the mixture to stand for several hours, and then add first the remainder of the glycerin and afterward the required amount of rose water, with agitation, after which allow it to stand, when it clears up.

CARD-INDEXING SYSTEM FOR PRESCRIPTIONS.

By Jacob Diner.

The author recommended that the compounder of a prescription be required to place the original recipe with the face down, and to copy on a suitable card, from memory, the articles he used in filling it. This is then checked with the assistance of another clerk, and properly numbered and filed, repetitions being filled from the card, and noted each time on the card. Several practical advantages were claimed for the method.

A FEW MERITORIOUS EXTERNAL ANTISEPTIC PREPARATIONS.

By J. T. Harbold.

Formulæ were given for the preparation of an antiseptic glove lubricant, antiseptic flexible collodion, and a hand and toilet lotion.

PRACTICAL EXPERIENCE IN DISPENSING.

By Leon Lascoff.

The author considered some of the causes which affect the character of identical prescriptions, when a different order is followed in adding the ingredients, or by other changes in the method of compounding.

The two following papers were read in the absence of the author by Caswell A. Mayo:

THE DUPLICATE PRESCRIPTION BLANK.

By J. B. Moore.

The author advised that the pharmacists furnish physicians with prescription tablets with carbon paper, and presented a form of letter suitable to accompany the same.

THE DOSE DIAL.

By J. B. Moore.

The author said that the dose dial constitutes an inexpensive little gift, which would be appreciated by the pharmacist's patrons.

COUNTER PRESCRIBING AND DISPENSING.

By F. M. Apple.

The author thought that such simple remedies as paregoric, castor oil, essence of Jamaica ginger and like preparations could be dispensed by the pharmacist, if properly labeled, but disapproved the practice of selling non-secret remedies for various diseases.

MILK OF MAGNESIA.

By Otto Raubenheimer.

The author suggested that the 250 grammes of magnesium sulphate directed in the formula of the National Formulary be reduced to 240 grammes.

CITRO-COMPOUNDS OF IRON.

By A. B. Stevens.

The author criticised the formulas given in the National Formulary for these preparations, and expressed the opinion that instead of the iodine and chlorine being combined as citro-salts, double salts are formed, one of which is a haloid salt and the other the citrate of iron.

The chairman remarked that this paper involved a theoretical problem, the investigation of which should be continued in the Scientific Section.

TINCTURE OF IODINE.

By Charles H. LaWall.

The author carried on a series of experiments to determine the keeping qualities of this tincture under varying conditions. He found that a tincture of alcohol and iodine deteriorates rapidly either in light or darkness; that the tincture made according to the official method keeps well under nearly all conditions, and that when sodium chloride was used to prevent the loss of free iodine instead of potassium iodide, the preparation was not quite as stable as when made according to the official process.

QUALITY IN DISPENSING.

By Wilbur L. Scoville.

After stating that there is "a new atmosphere in pharmacy and a new outlook," the author said that physicians are becoming acquainted with the legal medical standards, and that this acquaintance "must be ripened into friendship." One of the ways to accomplish this is by strict attention to quality. Then, too, it must be remembered that the semi-secret remedies which the National Formulary was designed to replace owed their popularity and also their success to their artistic qualities—those qualities that appeal to the eye and the palate. In conclusion, the author said: "Physicians are ready to take up National Formulary and U. S. Pharmacopœial preparations, but they must not be disappointed in them. They have been educated to scepticism regarding the pharmacist's ability to satisfy them, but pharmacists can and must prove their ability to please. The times demand artistic as well as therapeutic results. The preparations that win must show both. Only such will hold their own. And if physicians find both results in the preparations that they shall try from their druggists, they will stick to them."

THE MODERN PHARMACY.

By B. Sacks.

The author deplored the bizarre character of many modern pharmacies and advised that the pharmacist give his undivided attention to his professional work.

Several other papers were received, some of which were read by title:

"Some Interesting Prescription Incompatibilities," by W. J. Robinson; "Cataplasma Kaolini," by H. C. Blair; "The Future Pharmacist," by B. Romansky; "Cutting Compounding Corners, or Pharmaceutical Economies," by Frank E. Fisk; "His Terrible Mistake in Dispensing," by L. Marmor; "Twelve Prescriptions," by H. A. B. Dunning; "Glycerin *vs.* Sugar," by William C. Kirchgessner; "Heat and Its Utility at the Compounding and Dispensing Counters," by Frank E. Fisk; "Clean Them Yourself," by William F. Kaemmerer; "Practical Thoughts and Suggestions," by Louis Schulze; "A New and Continuous Lime Water Apparatus," by Otto Raubenheimer; "Elixir Curaçoa," by H. C. Blair.

The following officers were elected: chairman, Franklin M. Apple; secretary, Joseph Weinstein; associates, Wilbur L. Scoville and E. Fullerton Cook.

SECTION ON EDUCATION AND LEGISLATION.

Oscar Oldberg, chairman; Joseph W. England, secretary; associates: David F. Jones, Harry B. Mason and Wm. K. Ilhardt.

This section held two sessions, beginning Wednesday morning. Chairman Oldberg's address last year, and the one presented by him this year, will find a permanent place in the history of pharmaceutical education in this country. The former was published in this JOURNAL and the second will also be published in full in its columns. The address was referred to a committee composed as follows: Henry P. Hynson, Wm. M. Searby and C. S. N. Hallberg.

In Secretary England's report comprehensive statistical data pertaining to schools and colleges of pharmacy were presented, giving the entrance requirements, attendance, number of graduates, weeks of instruction, and hours of obligatory lecture and laboratory work. The report also included the results of the work of the State boards of pharmacy, regarding applications, registrations, examinations, etc., and in addition information relating to new legislation in the different States and territories, as obtained from the different State and territorial associations.

Dr. J. N. McCormack, a delegate from the American Medical Association, addressed the Section on "What Should be the Relation of Physicians and Pharmacists?" Dr. McCormack had been invited to make this address, in consequence of certain statements contained in a report which he presented as chairman of its Committee on Organization at the recent meeting of the American Medical Association (see this JOURNAL, July, 1907, p. 331).

In beginning the discussion, Dr. McCormack spoke of his long connection with legislative work in his own State, and of the opportunities which he had had to study the relations and feelings of physicians and pharmacists, not only in this country, but abroad. He then quoted from that part of the Atlantic City report which contained the statement that, at the State capitals visited by him, he found expert lobbyists of the National Association of Retail Druggists working against pure food and drug legislation. He said, however, that this accusation was not intended to apply to all pharmacists, and that he also held a large element of his own press and people responsible for many of the abuses of this class.

Dr. McCormack then referred to the indiscriminate selling of habit-producing drugs and nostrums, and said that, aside from the victims of this practice, the three factors essential to its continued existence are the proprietor or manufacturer, the public and religious press as advertising mediums, and the drug trade; and that without the complicity of these three agencies this business could not thrive for six months. He said that of these three, druggists profit least by the nostrum business. But he said it was his purpose to consider the moral phase of the question, and that, profit or no profit, druggists cannot afford longer to be a party to the practice, or to oppose legislation intended to lessen this evil.

Some of the grave and harmful effects of counter-prescribing were pointed out, after which the subject of dispensing by physicians was considered. This latter practice was attributed in part to "the gradual drifting apart and coincident misunderstanding of the two vocations," but mostly to the imperfect manner in which pharmacology and therapeutics have been taught in the medical schools. The speaker added that "with the proper conception of duty, the time has come when no physician can afford to prescribe and no pharmacist can afford to dispense any preparation of which he does not know the composition and purity. This he said meant getting back to the Pharmacopœia and National Formulary, although it did not interfere with the use of substances of known composition and value, but that it would put an end to all secret remedies.

Dr. McCormack said that instruction of this kind is not only being urged upon the medical schools, for the benefit of the future physician, but that it is being made a permanent feature of the post-graduate courses.

The speaker then said that not only is the work of reform in these matters in its infancy, but that the results in some directions must be long delayed and imperfect without the earnest co-operation of the rank and file of druggists. He further said: "I believe that there should be such an effective alliance, offensive and defensive, between this organization and the American Medical Association as will insure only pure drugs for the sick people of this country. This would require joint action, through committees and otherwise, in framing, passing and enforcing the necessary legislation, and in what is even more important as a necessary premise for all this—such a campaign of education, systematically conducted over the entire country, as will give the professional and public sentiment, without which all such legislation is almost worse than useless."

Dr. H. H. Rusby briefly discussed the question—"What are the best means which the pharmacists may adopt to render their services most valuable to the medical profession and the public, and to command their confidence and appreciation?" speaking as follows: When physicians give evidence of their ability to diagnose correctly and cease from dispensing, then will pharmacists respect them. When pharmacists refrain from prescribing and give evidence of competency, then will physicians respect them. The remedy does not lie in criticising the other profession, but in each disciplining the members of its own profession. If pharmacists improve themselves physicians will know it, and vice versa.

The question—Is pharmacy a profession? has been answered in the affirmative.

Of the methods adopted to secure pure drugs, none are so effective as those originated by the American Pharmaceutical Association. On the other hand, no one could ask more effective methods for eliminating quackery than those adopted by the American Medical Association.

The present is witnessing an educational renaissance in pharmacy, and this is helping to stimulate the activity on the part of the medical profession, which fact was acknowledged and confirmed by Dr. Cohen. It is the duty of every one to familiarize himself with present conditions for reform and to find some place in which to work, both women and men.

These two addresses were discussed as follows:

Jacob Diner refuted the statement made by Dr. McCormack that the National Association of Retail Druggists maintained an expensive lobby to promote nostrum interests; he said that as a past officer of the association he had no knowledge of such a lobby. He said that sometimes the members of the N. A. R. D. found themselves on an opposite side from the medical profession in State legislation. He said the druggists are not interested in legislation merely to protect their pockets, but to protect their profession, and cited as an example of adverse legislation the law proposed in New York to the effect that no drugs should be sold by druggists except on physicians' prescriptions. On the other hand, he said the members had supported anti-narcotic legislation, and he maintained the honor and principle of the druggists of the United States.

Professor Hallberg said that the members of the Section should not discuss past matters on account of loss of valuable time. He claimed that it was necessary for Dr. McCormack to repeat the statement which he made as a matter of history, as it was by virtue of it that he had been invited to speak to the association. He said that we should cut loose from the moorings of the past, and pointed out that the whole medical profession seems to be a subject for the caricaturist as a result of such discussions.

Dr. William Muir, of New York, said that, from his experience in legislative work, he agreed with Mr. Diner; that he had approached the medical men of the State Legislative Committee of New York, and that they appeared not to be willing mutually to consider the form of legislation, but rather to desire to dominate the proceedings.

He also took exception to the statistics quoted by Dr. McCormack, showing that the majority of the habitues of narcotic drugs in insane asylums owe their condition to the unscrupulous selling of these drugs by pharmacists; he said that his own investigations showed that the free use of hypodermics by physicians is largely responsible for the number of these victims.

Dr. Muir concluded his remarks by saying that experienced men should be on the legislative committees; that the members of boards of pharmacy are the most competent to look after the question of pure drugs.

Henry P. Hynson said that Dr. McCormack had presented his case as fairly as it could possibly be done, and with but one object, namely, to benefit suffering humanity and to elevate the profession of pharmacy.

W. M. Searby, of San Francisco, said that in his own city the physicians who write any considerable number of prescriptions get a percentage on them, and that druggists who refuse to comply with this demand will not be able to succeed. This, however, Professor Searby said is a side issue, and insisted that druggists should maintain their dignity and receive recognition as equals, since they are also endeavoring to improve standards of education and to promote the propaganda for reform.

C. B. Lowe, of Philadelphia, contended that professors of materia medica should teach the physiologic action of drugs.

W. C. Anderson, commenting on the proposed New York pharmacy law, said that it would have permitted druggists to sell preparations of any percentage strength providing they were so labeled. He said that the U.S.P. standards should be upheld.

Professor Anderson thought that the main bone of contention is the selling of nostrums by pharmacists; but he said, when the law went into effect requiring manufacturers of narcotic preparations to label them, many druggists threw them out. He then declared that if physicians will tell druggists which patent medicines to throw out they will do so; but he said no pharmacy is complete without them.

Professor Hallberg said that some years ago he attended a public lecture by Dr. McCormack, in the course of which the speaker advised the audience that whenever they saw a pharmacy with signs of cut rates displayed, they should pass it by.

In replying to the several speakers, Dr. McCormack said that whatever the two professions have been doing in the past, they should do differently in the future.

He admitted that he was glad to be corrected on the lobby statement; that this knowledge would enable him to face those making false claims before legislative committees. He then pleaded that the State committees of the two associations come together and discuss the various subjects brought up fairly and calmly; and that these latter bodies join hands with the Council on Chemistry and Pharmacy of the A.M.A., which he said belongs as much to one profession as the other. He thought that joint committees might devise harmless home remedies which could be sold by druggists without interfering with ethical canons.

Again he urged that the two professions join hands and said, quoting the words of our great commander, "Let us have peace."

Robert A. Hatcher said he thought the American Pharmaceutical Association, with its 2,000 members, should embrace the opportunity offered to join hands with 70,000 medical men, and offered the following resolution, which was adopted:

Resolved, That this Section request the American Pharmaceutical Association to direct the Committee on Legislation to co-operate with the State legislative committees of the American Medical Association in the furtherance of such legislation as is designed for the mutual benefit of the two professions and the community at large.

A recommendation by L. E. Sayre that the State pharmaceutical associations be informed of this action and asked to adopt similar resolutions, was approved.

President Eliel said that he saw the dawning of the light in the east, and that he was thankful to witness these signs of better relations between physicians and pharmacists.

Professor Hallberg read a resolution along similar lines, which had been adopted by the Section on Pharmacology at the recent meeting of the A.M.A.

On convening in the afternoon, the Section took up the discussion of the subjects involved in the following query and resolution:

What effective action can the American Pharmaceutical Association take to prevent the discredit cast upon our calling by pharmacy laws which in specific terms authorize the Boards of Pharmacy to license minors and persons without any prescribed educational qualifications to open or conduct drug stores on their own responsibility, to have charge of the dispensing of medicines, and to sell opium, morphine, cocaine and other habit-producing drugs?

Resolved, That it is the sense of the Section on Education and Legislation of the American Pharmaceutical Association that pharmacy laws which are so worded that they permit or can be construed to permit the issuing of licenses to minors and persons without definitely prescribed educational qualifications to open or conduct drug stores, to have charge of the dispensing of medicines, and to sell habit-producing drugs, cast unmerited reproach upon our occupation and should be amended.

This resolution was adopted.

Jacob Diner considered the two following queries:

Are the conditions in the drug stores of to-day such as to warrant the assumption that those admitted to apprenticeship can there acquire the education requisite to make them competent pharmacists?

What instruction do the apprentices and clerks receive in the average drug store?

Mr. Diner said that in the olden time the apprentice was required to have a common school education, and was taken into training by the pharmacist to whom he was bound. Now, Mr. Diner said, no questions are asked as to the apprentice's education and no training is given by the proprietor. He claimed that a professional pharmacist cannot be built up without a good foundation.

Otto A. Wall, of St. Louis, read a paper entitled, "Why We Should Not Demand a High-School Education as a Prerequisite."

The writer pointed out a number of the defects of our educational system, and substantiated his claims by numerous quotations from prominent educators. He said that we should begin to improve this system from the foundation upward and not from the top downward. He then cited statistics to show that only a very small percentage of the pupils, even in the large cities, pass the high school, and that improvements should be made in the grammar schools so as to fit the pupils to engage in the general pursuits of life. He thought that in the common schools the useful should be kept more prominently in mind and that in the graded schools less attention should be paid to those studies required for entrance to the universities.

The author furthermore claimed that the universities are monopolistic in their tendencies; that they demand such large sums from the public funds that there is not sufficient for general educational purposes.

He placed colleges of pharmacy, manual training schools and other technical schools on the same plane, and said that whatever preliminary education is necessary for the students of these schools, the institutions must teach themselves.

Dr. H. L. Taylor, of the Department of Education of New York, was also asked to address the Section. Dr. Taylor took issue with Dr. Wall and said that the object of education is not utilitarian, but ideal; that in the United States more money is being given for the training of children than in any other country. He then asserted that utilitarianism is not the test of education, and said endeavors are being made to give a uniform education to every boy and girl in the United States. He said that one of the earlier efforts was to establish free schools, and then to establish free high schools.

Then referring to the colleges and schools of pharmacy, he said the question is narrowed to this: They are to be reduced to trade schools, and the students of pharmacy shall be satisfied with an education which can be obtained at fourteen years of age. They must, however, wait until they are twenty-one years old before they can graduate from a college of pharmacy.

In closing, Dr. Taylor assumed that the association would not approve of this plan.

Professor Hallberg agreed with Dr. Wall, and criticised severely the instruction given in the public schools. He said that a grammar school graduate ought to be able to take up the special studies taught by colleges of pharmacy.

Attention was then given to the following query:

The apprenticeship system has ceased to exist in nearly all occupations in which it formerly constituted the chief or only method of training by which trades and professions could be mastered, and professional, technical and trade schools have taken its place. It is generally recognized that this change is an advance, and that greatly increased efficiency may be attained through the special schools referred to. Is this true also in regard to training for pharmacy?

Gustave Wolff, of New York, contributed a paper on this subject, in which he advocated a return to the old apprenticeship system, which was a clerkship of ten years.

Clement B. Lowe, of Philadelphia, followed with a paper on "Pharmaceutical Experience as a Prerequisite to Pharmaceutical Education and Examination."

H. L. Taylor, secretary of the Syllabus Committee, presented a list of definitions of pharmaceutical terms.

The query—What are the best methods of teaching students of pharmacy in each of the principal branches included in the curricula of the pharmaceutical schools?—was considered by C. S. N. Hallberg, who said that, owing to certain inconveniences in presenting lectures, he had devised a note-book with a syllabus on one page and a blank page opposite. The student is asked to review the subject in the text-book and then to write a thesis on it on the blank page.

The following members were elected officers for the ensuing year: Chairman, Joseph W. England, Philadelphia; secretary, Charles H. LaWall, Philadelphia; associates, L. E. Sayre, Lawrence, Kan.; Wilbur L. Scoville, Boston; F. A. Hubbard, Boston; F. A. Sala, Winchester, Ind.

SCIENTIFIC SECTION.

Reid Hunt, chairman; Virgil Coblentz, secretary; Charles E. Vanderkleed, associate.

This Section held two sessions beginning Thursday morning. Mr. Vanderkleed explained, in calling the first session to order, that owing to the absence of both Dr. Hunt and Professor Coblentz the past summer, much of the work of the Section had fallen to him. He also stated that owing to the fact that Dr. Hunt had to prepare several papers for the International Congresses, which he was attending in Europe, he had been unable to finish his address as chairman of the Section.

The Committee on Ebert Prize, through Charles E. Caspari, of St. Louis, chairman, recommended that the prize be awarded to Frederick B. Power and Frank Tutin for their paper on "Chemical Examination of Eriodictyon."

The report of the Committee on Drug Adulterations was read by Eustace H. Gane, of New York, who stated that the past year had seen marked improvements in the drug market. Several quotations were read relating to cases where some variations in quality were found, and the opinion expressed that the persons involved should not be held as adulterators for such deficiencies. Mr. Gane said that inasmuch as the assay processes do not always yield concordant results, and also in view of the fact that some of the official methods have been adversely criticised, Boards of Health should be very lenient in considering cases of this kind.

Considerable variation in vegetable drugs, due to variation in percentage of moisture, as also considerable variation in the amount of extract, was reported.

It was, however, found that no class of substances is more adulterated than the essential oils, and that the mixtures sold for essential oils conform more closely to the U.S.P. standards than the natural oils.

The report was supplemented by Dr. H. H. Rusby, who presented the following: The extract of glycyrrhiza is required by the U. S. Pharmacopœia to contain not less than 60 per cent. of soluble matter, whereas if properly made it yields 95 per cent. of soluble matter. Manufacturers thus have an opportunity of adding other materials, and inasmuch as these are sometimes deleterious in character, the Pharmacopœia should specify what these added substances should be.

During the whole month of August only six articles were condemned in the appraiser's office in New York. The drugs were not only up to standard, but of fine quality. Last year it was claimed that certain imported drugs could not be obtained of good quality, and the U.S.P. Revision Committee were requested to reduce the standards. The members, however, took the stand that if the standards were maintained, better drugs would be sent to this country, and as a result there has been a steady improvement in quality. Some spurious drugs are still coming in, and this is due to the fact that the appraisers are not yet able to distinguish the genuine from the spurious drugs. These include strophanthus, jaborandi leaves, quebracho. Japanese aconite is imported for manufacturing purposes and must be so labeled. Bombay mace, while worthless as a spice, could be imported for other purposes if properly labeled.

Lyman F. Kebler said that to his mind the term powdered asafetida is a misnomer, as asafetida cannot be powdered unless it is admixed with some other substance, and he claimed that the diluent should be stated. Referring to a report by Dr. A. R. L. Dohme that a sample of asafetida which he examined yielded 60 per cent. of ash, Dr. Kebler said that while the port of New York is closed to inferior products, the same supervision does not yet apply to the other ports. He also stated that wood alcohol preparations are being imported into this country for veterinary purposes, and that investigation showed that they are also being used in the treatment of human beings. The following is an example of the method of labeling these preparations: "tincture cinchona meth."

He then spoke of the importance of the interstate commerce regulations, and said that a manufacturer in Pennsylvania who uses wood alcohol in the manufacture of preparations to be sold in his own State does not use it in the products sent to other States. Attention was also directed to the fact that sweepings are imported into this country and admixed with the genuine drugs, or they are sometimes powdered and sent out to the trade.

Prof. John Uri Lloyd said that the valley of the Menander River furnishes the licorice used in the manufacture of tobacco. He said that wherever there is a wheat field or vineyard, there the licorice plant is found. It is so abundant as to be regarded as a weed and cannot be eradicated. The extract of licorice made in that region supplies the European market, but none of it is sent to this country on account of the import duty. He said that the method of manufacture of the extract is rather primitive, but that the product is pure, as there is nothing cheaper than licorice itself.

Following are abstracts and extracts of the papers presented to the section:

CHEMICAL EXAMINATION OF GRINDELIA. PART II.

By Frederick B. Power and Frank Tutin.

(Read by Virgil Coblentz.)

This is a continuation of the work reported by the authors at the meeting of the association in 1905. The drug used was probably *Grindelia camporum*, Greene. In the previous paper the authors reported the isolation of the hydrocarbon hentriacontane, $C_{31}H_{64}$, a new phytosterol (m. p. 166° C.), l-glucose, tannin, amorphous coloring matter, formic acid and an essential oil. The chief constituents are amorphous resins, which have now been further examined. These resins, which are soluble in petroleum, consist to a large extent of a complex mixture of liquid acids. These acids are for the most part optically active, unsaturated cyclic compounds. Some of them are oxy-acids and appear to contain benzene nuclei. A very small amount of cerotic acid and apparently a trace of palmitic acid are also present. Another hydrocarbon has also been isolated, which consists for the most part of a complex mixture of esters, presumably glycerides.

The ether extract of the resins consists, to a very large extent, of a mixture of amorphous products and very small amounts of a colorless crystalline alcohol and a yellow substance of phenolic nature. The alcoholic body possesses either the formula $C_{17}H_{28}O_3$ or $C_{23}H_{38}O_4$. It crystallizes in plates, melting at 256–257° C., and yields an acetyl derivative melting at 161° C. The yellow phenolic substance crystallizes in prisms, melting at 227–228° C., and possesses the formula $C_{14}H_{12}O_5$. It gives an acetyl derivative melting at 154° C.

ASPIDIUM MARGINALE AND OSMUNDA CLAYTONIANA.

By Henry Kraemer.

The rhizomes of a number of ferns have been used in medicine since ancient times. Of these, that of *Aspidium Filix mas* is probably the most valuable and is official in most of the pharmacopœias. It is, however, only a little more than thirty years since the rhizome of the closely related American species, *Aspidium marginale*, was first subjected to analysis. The rhizome was subsequently examined by Cressler and Kennedy, and recommended by Maisch for introduction into the United States Pharmacopœia, becoming official in the 1880 edition. The rhizome, having been found to have properties similar to that of *Aspidium Filix mas*, was probably introduced with a view of encouraging the collection of the American drug, and probably also with a view of obtaining the drug in a fresh condition.

While the crude drug dealers mostly list only the foreign drug, and the filicic acid on the market is said to be derived from *Aspidium Filix mas* growing in Europe, there are indications that attempts are made to collect the drug in this country. The collectors, however, do not always seem to be able to distinguish *Aspidium marginale* from others of our native ferns, and in several recent instances the drug purchased for Aspidium has proved to be the rhizome of *Osmunda Claytoniana*, a plant belonging to a different family of ferns.

It was pointed out that there is no difficulty in distinguishing these two ferns. The plants belong to distinct families of the fern group. *Aspidium marginale* is characterized by the fact that there is no distinction of fertile and sterile fronds and by the fact that the sori have a covering known as the indusium. On the other hand, *Osmunda Claytoniana* belongs to a family distinguished by the fact that there are two kinds of fronds, fertile and sterile, which are very distinct in character.

The rhizomes and stipes of these two plants are also very distinct in character. In *Aspidium marginale* the stipes are especially characterized by the presence of chaff. The special characters of the stipes of *Osmunda Claytoniana* are the large central fibrovascular bundle, which is involute, and the absence of internal glandular hairs.

A STUDY OF THE ALKALOIDS GELSEMINE AND GELSEMININE.

By L. E. Sayre.

The author said: "The results of this study have emphasized the fact that the so-called gelsemic acid, contrary to statements of early investigators, is only scantily precipitated by lead acetate and subacetate. This æsculin-like principle is so persistent that the residual solution, after lead precipitation, contains a measurable quantity of the principle. The results have, in addition, shown that the same results as Thompson obtained (by the use of lime in removing the plant acids) cannot be obtained by the use of lead. That is, the gelsemine chloride, in colorless crystalline form, is not obtainable by the lead process. It is to be noted, however, that the fresh drug was employed in the present study. I hesitate to suggest that gelsemine, as described by Thompson, may be absent in the fresh root. It will require further study to remove the doubt that this distinct principle exists only in the dry root. The existence of two alkaloids in gelsemium, having the properties described by Thompson and others, not having been fully accepted by some authorities, is worthy of further study."

ASSAY OF PREPARATIONS OF GELSEMIUM.

By L. E. Sayre.

The author applies the general method of assay recommended by Webster (see this JOURNAL, 1907, pp. 301–307.)

THE ESTIMATION OF CANTHARIDIN IN CANTHARIDES AND PREPARATIONS.

By Frank R. Eldred and W. C. Bartholomew.

The method given is as follows: Place 10 grammes of cantharides in No. 60 powder, in a small percolator provided with a stopcock; add a mixture of 25 c.c. of chloroform and 2 c.c. of glacial acetic acid and allow to macerate for one hour. Then drain the percolator, pack the drug firmly and exhaust by slow percolation with chloroform, receiving the percolate in a Gordin's distilling flask. Distil off most of the chloroform by means of a water bath, and blow air through the flask to remove the last traces. Add 10 c.c. of liquid petrolatum and 150 c.c. of hot water to the residue in the distilling flask. Heat nearly to the boiling point on a water bath, and agitate several times while keeping at this temperature. Draw off the aqueous solution through a small filter into a separatory funnel. Repeat this operation with three more portions of 75 c.c., 50 c.c., and 25 c.c. of water. Cool the mixed aqueous liquids, add a little hydrochloric acid and extract by shaking with four portions of chloroform. Evaporate the chloroform solution in a tared flask or beaker on a water bath. The solution must be removed from the water bath while some chloroform remains, and the evaporation completed in a current of air, as decrepitation occurs when the cantharidin begins to crystallize. The cantharidin is then purified in the manner described by Self and Greenish, as follows: Wash the crystals with three portions of 2·5 c.c., 2·5 c.c. and 1 c.c. of a mixture of equal parts of absolute alcohol and petroleum ether saturated with cantharidin, pouring the washings through a small filter. Then wash the crystals and filter with petroleum ether until the filtrate leaves no appreciable residue on evaporation. Wash the filter with a little chloroform, receiving the filtrate in the vessel containing the greater portion of the cantharidin. Evaporate the chloroform in a current of air and dry at ordinary room temperature in a vacuum desiccator until of constant weight.

THE ESTIMATION OF IRON IN SCALE SALTS.

By Frank R. Eldred and C. M. Pence.

The authors found that the results obtained by the iodometric method were all lower than the gravimetric results, and that this was due to the presence of ferrous iron. In order to oxidize all of the iron to the ferric condition, they found that the citric or tartaric acid present must be completely oxidized. The only practical method of oxidation found was by means of concentrated sulphuric acid. The scale salt (0·5 gramme) was placed in a 500 c.c. Kjeldahl flask, 20 c.c. of concentrated sulphuric acid and 10 grammes of potassium sulphate were added, and the flask heated until only a pale yellow color remained. The contents of the flask were then dissolved by heating with about 200 c.c. of water, and the solution cooled and titrated.

All methods which depend upon the reduction of ferric iron give low results when applied to scale salts; moreover, if heat is used in dissolving the salt, a further reduction of iron will take place, especially with the tartrates, where concordant results cannot be obtained unless the conditions under which the salt is dissolved are always the same.

In order to determine the total iron in scale salts it is necessary to employ a gravimetric method, or to completely oxidize the organic acid and ferrous iron before titration.

ORGANOTHERAPEUTIC PRODUCTS, WITH SPECIAL REFERENCE TO THE STANDARDIZATION OF THYROID PREPARATIONS.

By F. C. Koch.

The author concludes that there are no chemical or physiological quantitative methods for testing thyroids. Of Hunt's physiological method, he says: "It is by far more delicate than any chemical means we know of, but so far it has not been perfected as a quantitative method. Thus, Hunt finds that the susceptibility of mice depends largely upon their age, weight and the nature of their food, also that 0·3 gramme U.S.P. desiccated thyroids fed for twelve days did not seem to have a proportionately different effect from feeding 0·1 gramme for ten or eleven days, or 0·05 gramme for fourteen days. Let us hope that Hunt's very delicate method can be devised to be of value in a quantitative way."

THE U.S.P. METHODS FOR ASSAYING PEPSIN AND PANCREATIN.

By F. C. Koch.

The author commented on these methods as follows: The directions are deficient as to important details. In assaying pepsin, unnecessary delay after boiling the eggs and passing the albumen through the sieve must be avoided. Disintegration with acid water must be thorough, shaking by rotation being more satisfactory than by inverting. The final method of reading is very unsatisfactory. The peptonizing test for pancreatin is entirely unsatisfactory. As the test now stands, a weak or strong pancreatin can be considered official, depending upon the amount of nitric acid used. In the diastasic assay the kind of starch to be employed should be specified, the starch paste being best made in a beaker and cooled and used at once.

Dr. John M. Francis, of Detroit, said that he had previously stated that any pancreatin could be made to appear good or vice versa by the U.S.P. method. He said that milk is a very variable article, and that the peptonizing test should be dropped. He claimed that for the assay process potato starch is to be preferred, but care should be taken to select a neutral starch, that on the market being frequently acid in character.

Dr. Kebler expressed the opinion that the only satisfactory diastasic method is one which will take into consideration the products formed.

THE U.S.P., EIGHTH REVISION, AND ITS RELATION TO SOME DRUGS AND CHEMICALS.

By A. R. L. Dohme and H. Engelhardt.

Some reasons were given why corrections in the U.S.P. were necessary. Experiences in the application of the U.S.P. to acetphenetidin, aloin, amyl nitrite, asafetida, benzoic and boric acids, belladonna leaves and root, cerium oxalate, cinchona and its fluidextract, coca leaf, colchicine, copaiba, ether, hyoscine hydrobromide, jalap, quinine salts, santal oil, resin scammony and spirit of nitroglycerin, were described.

A REVIEW OF THE LITERATURE ON THE ESTIMATION OF ALKALOIDS FOR THE YEAR OF 1906.

By W. A. Puckner.

An attempt was made to facilitate the work of those interested, and to present the advances made in this important field. Important contributions to the estimation of alkaloids which have appeared in foreign journals were given in considerable detail. American publications, being more easily accessible, are referred to rather briefly. Reference was made to publications dealing with the estimation of alkaloids in general, followed by an account of the work done in the valuation of aconite, the mydriatic drugs, cinchona, coca, caffeine-bearing drugs, colchicum, ergot, gelsemium, hydrastis, nux vomica, opium, physostigma, pilocarpus and veratrum. This was followed by a discussion on the assay processes of the U.S.P.

THE IMPORTANCE OF A TRUE CONCEPTION AND EXPRESSION OF ATOMIC COMBINING VALUES.

By Oscar Oldberg.

The author spoke of the importance of recognizing the intimate relations of electricity and chemistry, and summarized his deductions as follows: Atomic combining values are not fully represented by valence. The use of algebraic expressions of combining value aids greatly in understanding chemical changes. Positive and negative elements can be identified according to their relative positions in the periodic system of classification. The combining values of negative elements are constant. A new periodic table is presented which masses the typical elements about the newly discovered gaseous elements of the atmosphere, which occupy the center of the table, with the negative elements to the left and the most pronouncedly positive elements to the right.

The paper was discussed by Messrs. Puckner, Asher, Sadtler, Coblentz and Charles E. Caspari, one of the questions which arose being the relative importance of teaching theoretical and practical chemistry in colleges of pharmacy.

SOME NOTES ON THE CLASSIFICATION OF THE PRINCIPAL INORGANIC COMPOUNDS.

By Oscar Oldberg.

The author considered the modern definitions of acids, bases and salts based on the theory of ionization, objecting to the classification of the halides and sulphides of metals as "salts," and the corresponding hydrogen compounds as "acids," because this classification ignores structure. He said the properties, including those dependent upon ionization and hydrolysis, should receive due consideration, but not at the expense of structural analogy. A too general classification is less valuable than one which differentiates between compounds of decidedly different structure, without ignoring similarities of general behavior.

POISON SUMAC (RHUS VENENATA).

By A. B. Stevens and L. E. Warren.

This valuable contribution will appear in the November number of this JOURNAL.

Professor Stevens also described a simple apparatus for the estimation of both the alcohol and camphor in spirit of camphor, which was devised by James Seymour.

A PHARMACOLOGICAL STUDY OF CANNABIS AMERICANA.

By E. M. Houghton and H. C. Hamilton.

The authors find that Houghton's method for determining the physiological activity of *Cannabis sativa* by internal administration to especially selected dogs is reliable when the standard dose, ·010 per kilo body weight, is tested in comparison with the same quantity of a standard preparation of known strength. Furthermore, *Cannabis sativa*, when grown in various localities of the United States and Mexico, is found to be fully as active as the best imported Indian grown *Cannabis sativa*.

ON MARRUBIIN.

By H. M. Gordin.

In a preliminary report the author states that marrubiin has the formula $C_{21}H_{28}O_4$; it melts at 154·5–155·5°; it is very easily soluble in acetone, chloroform, pyridine, warm phenol and hot alcohol; difficultly soluble in ether, benzene and cold alcohol. It requires for solution about 60 parts of cold alcohol and about 20,000 parts of cold water. It is dextrorotatory. It is not affected by cold aqueous or alcoholic potassium hydroxide. When boiled with alcoholic potassium hydroxide for a short time, marrubiin is hydrolyzed, taking up a molecule of water and becoming converted into an acid which he has named marrubic acid. Marrubic acid has the formula $C_{21}H_{30}O_5$; it melts at 173–174° C., is dextrorotatory and forms easily soluble salts, none of which could be obtained in crystalline form. While marrubiin does not reduce Fehling's solution or ammoniacal silver nitrate, marrubic acid reduces them both very readily. The acid is monobasic and forms esters of which the methyl and ethyl compounds crystallize easily.

OIL OF HAMAMELIS VIRGINIANA.

By Wilbur L. Scoville.

Two samples of oil, obtained from different lots of the grease or crude distillate, were examined and showed the following characteristics: Specific gravity, at 25° C., 0·8984 and 0·8985; refractive index, at 20° C., 1·4830 and 1·4892; optical rotation, + 4·6 and + 5·05; saponification equivalent, 3·80; saponification equivalent, after acetylization, 30·3. The greater portion of the oil distilled between 250° C. and 263° C. Ten volumes of official alcohol were required for solution at 25° C. The oil evidently consists chiefly of a terpene, with a small proportion of an alcohol (about 7 per cent.), and a still smaller amount of an ester.

PROGRESS IN THE SYNTHESIS OF ADRENALIN.

By Joseph L. Turner.

The paper embodied a review of research on adrenalin, its chemical constitution, and attempts to produce it synthetically. The author has, in conjunction with C. E. Vanderkleed, accomplished a synthesis of adrenalin along lines entirely different from those thus far recorded. The method was not given.

THE SYNTHESIS OF CAMPHOR.

By A. R. L. Dohme.

The author considered the reasons for endeavoring to synthesize camphor and the advantage of the same to the public. The laboratory of Professor Behal, his personality and method of work, were described, and attention called to the advance of French chemists over American from the standpoint of benefit to humanity as against benefit to science. The history of the synthesis of camphor and details of leading methods were given. Behal's method of synthesis was described and its advantages pointed out.

THE PRODUCTION OF CAMPHOR.

By A. R. L. Dohme.

The author stated that about 80 per cent. of the camphor on the market comes from Japan, while China supplies but 20 per cent. He said that the island of Formosa furnishes the larger proportion of Japanese camphor, but it is difficult to obtain, depending upon the fact that the region where the trees grow is sickly and the natives are savage. The principal refinery of the Chinese is at Foochow. Both China and Japan have taken measures to protect the camphor industry, China having passed a law that for every tree cut down, five shall be planted in its place. Japan is also planting trees, and has passed a law that no trees less than fifty years old shall be cut down. About 10,000,000 pounds of camphor are produced annually by the two countries. About 70 per cent. of the camphor produced is used in the manufacture of celluloid. The B grade of camphor contains camphor oil and water, while the BB grade is of fine quality.

KEFIR AND ITS MANUFACTURE.

By I. V. S. Stanislaus.

The author stated that the origin of kefir grains is not definitely known. It was formerly the custom not to sell them, because there was a belief that the remaining grains would lose their fermentative properties. He said that kefir is not like koumiss prepared from mare's milk by the Tartars.

EXAMINATION OF SOME SAMPLES OF HEXAMETHYLENE-TETRAMINE.

By Daniel Base.

The brands examined were Aminoform, Formin, Cystogen, Urotropin and Hexamethylene-tetramine. With one exception, all were found pure and, therefore, equally suited for medication.

OPIUM ASSAY WITH USE OF LEAD SUBACETATE.

By C. E. Parker.

A modification of the pharmacopœial method of assay was given whereby the morphine may be more nearly completely precipitated and in a suitable condition for titration.

A MECHANICAL AGITATOR FOR DRUG ASSAYING.

By C. E. Parker.

A simple, compact agitator for drug assays, with a modification for producing the intermittent agitation required in the official pepsin assay, was described.

[*To be continued.*]

JAMES THORNTON SHINN.
1834—1907.

See page 529.

THE AMERICAN
JOURNAL OF PHARMACY

NOVEMBER, 1907

POISON SUMAC.

By A. B. Stevens and L. E. Warren.*

Rhus vernix Linné (*Rhus venenàta* De Candolle) (Fam. *Anacardiaceæ*), known by various names, such as Poison sumac,[1] Poison dogwood,[1] Poison elder,[1] Poison-tree,[1] Poison wood,[2] Poison ash,[3] Swamp sumac[3] or Swamp dogwood,[3] is a small shrub or tree, six to eighteen or occasionally twenty-five[4] feet in height, which attains a diameter of from three to six or even ten[5] inches. It is found in swamps widely scattered over the eastern portions of North America, from Canada to Florida, and west to Minnesota and Louisiana.[6]

The bark is mottled-gray or brownish-gray, smooth on the branches and young shoots, but somewhat roughened on the trunks of the older trees. The leaves are compound, each leaf stalk bearing five to thirteen nearly sessile, ovate, obovate, or oval, beautiful green leaflets, each of which is acute at the apex and smooth at the edges. In autumn the colors of the foliage become extremely brilliant, scarlets, oranges and yellows predominating. In consequence of its attractive appearance at this season many collectors, ignorant of its venomous properties, are poisoned by it each year.[7] The small, greenish-yellow flowers, which appear late in June or early July, are borne on long, loose panicles from the axils of the leaves. The sterile and the fertile flowers are borne on separate plants. The fruit is a drupe, 4 to 6 mm. in diameter, unequal sided and somewhat flattened. At maturity in September the outer coat is thin, more or less striated, grayish-white and lustrous; the stone is pale yellow in color and noticeably grooved.

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* Holder of Frederick Stearns & Co. Fellowship of Pharmaceutical Chemistry.

[1] "Silva of N. Am." C. S. Sargent, III, 23–24.

[2] "Trees and Shrubs of Mass." G. B. Emerson, II, 575.

[3] "Plant Names, Scientific and Popular." A. B. Lyons, 321.

[4] "Silva of N. Am." C. S. Sargent, III, 23.

[5] "Trees of New Eng." Dame and Brooks, 136.

[6] "Silva of N. Am." C. S. Sargent, III, 23.

[7] "Trees of New Eng." Dame and Brooks, 187; also "Silva of N. Am." C. S. Sargent, III, 24.

The fruit remains on the tree until spring. On wounding the trees, a pale cream-colored, thick, poisonous juice exudes in abundance. This begins to darken at once and finally becomes black.

Very little work has been done upon the chemistry of the poison of *Rhus vernix.* A number of chemists, however, have worked upon the poisonous constituents of Japanese lac (*Rhus vernicifera*) and of poison ivy (*Rhus radicans*), and, as clinical observation has established that the dermatitis caused by any one of the venomous species of Rhus is similar in appearance to that from the others, it is now generally believed that the poisons from all these plants are identical. We give below a brief digest of the results that have been obtained by previous investigations of the constituents of these plants.

In 1815 Dr. Bigelow[8] experimented upon the juice of *Rhus vernix*, and showed that it possessed varnish-forming properties similar to the juice from Japanese sumac. He says:

"A quantity of the juice was boiled alone, until nearly all the volatile oil had escaped, and the remainder was reduced almost to the state of a resin. In this state it was applied while warm to several substances, which, after cooling, exhibited the most brilliant, glossy, jet black surfaces. The coating appeared very durable and firm, and was not affected by moisture. It was elastic and perfectly opaque, and seemed calculated to answer the purposes of both paint and varnish." Dr. Bigelow seems to have done no further work upon the chemistry of the juice.

In 1859 J. Khittel[9] worked upon poison ivy. He attributed the poisonous properties of this plant to a volatile alkaloid. He did not succeed in isolating any alkaloids, however, so that his results were of but little value.

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[8] "Medical Botany," J. Bigelow, I, 101–102.

[9] Wittstein's Vierteljahresschrift für praktische Pharmacie, 7, 348–59; abstract AM. J. PHARM., 1858, 542–4.

In 1865 J. M. Maisch[10] denied the presence of a volatile alkaloid in poison ivy, but announced the discovery of a new volatile acid to which he ascribed the poisonous properties of that plant, and to which he gave the name "*toxicodendric acid.*" He prepared salts of this acid, and stated that its properties were somewhat similar to those of formic acid and acetic acid, but more nearly like the latter The conclusions of Professor Maisch remained unverified for thirty years, and standard works on pharmacology quoted them without question until Dr. Pfaff investigated the subject in 1894–96.

Dr. Pfaff[11] proved that the "toxicodendric acid" of Maisch was *acetic acid*, and that the real poison of ivy (and sumac) existed in an oily substance which he named "toxicodendrol," and which was completely *non-volatile.*

He states that he prepared this oil[12] by repeated fractional precipitations of its lead salt from alcoholic solution by means of alcoholic solution of lead acetate. The free oil was obtained from its lead compound by decomposing the latter with ammonium sulphide. He found the poisonous oil in all parts of the plant—stems, branches, roots, leaves and fruit. It was present in both ivy and sumac, but more abundant in the latter. Dr. Pfaff does not state whether the "toxicodendrol" was obtained from the green or the ripened fruit, an omission to which we will again refer. According to this author, "toxicodendrol" is soluble in ether, alcohol, chloroform and similar solvents, but is insoluble in water.

It is easily decomposed by heat and is partially converted into resin on long standing. None of its other physical or chemical properties or constants were determined. The fruit of *Rhus toxicodendron* contained 3·6 per cent. of crude oil (*i. e.*, active oil contaminated with resinous matter and with oil not precipitated by lead acetate), the leaves 3·3 per cent. and the stems and branches 1·6 per cent.

Rhus vernicifera, the Japanese varnish tree, exhibits poisonous properties similar to the American sumac. The milk juice, which exudes when the plant is wounded, forms the Japanese lac of Oriental commerce. Several chemists have investigated the properties of this juice. The earliest was Ishimatsu, who reported[13] that the lac had a sweetish odor, an irritating taste, that it burned with a luminous flame, which emits dense black smoke, and that it mixes with fixed oils in all proportions. He found that the lac consisted of a substance soluble in alcohol, a gum soluble in water, a residue insoluble in alcohol or water, and small quantities of water and "volatile poison."

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[10] Proc. Am. Pharm. Assoc., 1865, 166.

[11] J. Exp. Med., Vol. II, No. 2, 1897.

[12] J. Exp. Med., Vol. II, No. 2 (1897), 187.

His method of separation was to extract the milk-juice with absolute alcohol, evaporate the solvent and dry the dissolved portion at 100° to constant weight. The portion insoluble in alcohol was extracted with hot water, filtered, the filtrate evaporated and the residue dried at 100° and weighed as gum. The residue insoluble in water was dried at 100° and weighed. Water and volatile matter were determined by difference.

He found that the fresh lac yielded 58·24 per cent. of substance soluble in alcohol. This alcohol-soluble substance was brownish-black in color and had the same odor as the original; however, it never dries to a varnish as that does. Lead salts of this compound were prepared and analyzed, from which the formula $C_{20}H_{30}O_2$ was calculated. No experimental proof that the poisonous constituent was volatile was offered.

In 1883 H. Yoshida,[14] employing Ishimatsu's method of separation, found 85·15 per cent. of alcohol-soluble substance in fresh lac of known purity. He called this soluble substance *urushic acid* (from Ki-urushi, Japanese lac). He states that the gum is identical with gum acacia, and reports the portion insoluble in alcohol or water as diastatic matter. He proved that the hardening of the lac was due to an oxidizing enzyme acting in the presence of moisture. Like the previous investigator, Yoshida believed that the poisonous constituent of the lac was volatile, but offered no experimental proofs for this supposition. Yoshida found that urushic acid was soluble in benzin, ether and carbon disulphide; less easily soluble in amyl alcohol and petroleum of high boiling point; insoluble in water; sp. gr. 0·9851 at 23°. It remains unchanged at 160°, but slowly decomposes with carbonization at 200°. From the alcoholic solution of urushic acid many salts were prepared, most of which were slightly soluble in alcohol, but insoluble in water. From the analysis of its lead salt Yoshida calculates the formula $C_{14}H_{18}O_2$ for urushic acid. By oxidizing urushic acid with chromic acid and analyzing the product obtained, he concluded that this acid takes up one atom of oxygen to form *oxyurushic acid*, $C_{14}H_{18}O_3$. He prepared and analyzed a bromine derivative of urushic acid, to which he ascribed the formula $C_{14}H_{12}Br_6O_2$.

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[13] Manchester Lit. and Philos. Soc. [3] 1882, 249.

[14] J. Chem. Soc., 1883, 472.

In 1905 Tschirch and Stevens[15] showed that the *volatile* principle of Japanese lac was *acetic acid* and that the *poisonous constituent* was a resinous substance which was *non-volatile*. This resinous substance was obtained by extracting the lac with alcohol and evaporating the filtrate (as Ishimatsu and Yoshida had done), taking up the residue with petroleum-benzin (b. p. below 65°) and pouring the solution into a large excess of fresh petroleum-benzin. A non-poisonous, semi-fluid resin was precipitated, while the poisonous substance remained in solution and was obtained as a dark, brownish-red oil on decanting and evaporating the solvent. By agitating the benzin-soluble portion with ethyl alcohol and petroleum-benzin in immiscible proportions, the poisonous principle remained in the alcoholic layer on separation. An oily, non-poisonous, brownish-red residue was left on evaporating the benzin layer, while the alcoholic layer gave a poisonous resin of similar appearance. Three fractions were thus obtained, but one of which was poisonous. Analyses of these will be referred to later. All were soluble in alcohol and all gave black precipitates with alcohol-soluble salts of mercury, iron, copper and silver. Lead acetate gave a gray precipitate, which became darker on standing. By oxidation all of the resinous substances gave a brown insoluble substance which the authors called *oxyurushin*,[16] and to which they gave the formula $C_{102}H_{138}N_2O_{19}$.

Gum and diastatic matter were also obtained from the lac, but the authors were unable to separate them. By using Ishimatsu's method of separation Tschirch and Stevens found the following results for Japanese lac :[17]

	Per Cent.
Soluble in alcohol	72·40
Soluble in water	4·05
Insoluble residue	2·35
Water and volatile matter	21·20

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[15] Arch. Pharm., 243, 516.

[16] Arch. Pharm., 243, 524.

[17] Arch. Pharm., 243, 515.

The alcohol-soluble portion was further separated into two portions by petroleum-benzin, as noted above, with the following results:

	Per Cent.
Benzin-soluble	78
Benzin-insoluble	22

By means of methyl alcohol and ether the benzin-insoluble portion could be further separated into three fractions.

The gum enzyme contained nitrogen, yielded mucic, oxalic and tartaric acids on oxidation with nitric acid, and produced a non-crystallizable, non-fermentable, dextro-rotatory, reducing sugar on hydrolysis with dilute sulphuric acid. The phenylhydrazine[18] derivative of this sugar melted at 162°–164°, corresponding to phenyl-sorbinosazone.

The gum-enzyme was very active, its aqueous solution rapidly changing freshly prepared tincture of guaiac to a deep blue color. This action was far stronger and more rapid with lac gum than with any other of the eleven gums tried. Tacamahaca, asafœtida and acacia approached lac gum most nearly in this respect.

Recently Acree and Syme[19] have worked upon poison ivy. They found gallic acid, fisetin, rhamnose and a "*poisonous tar, gum or wax*" in the extract prepared by maceration of the leaves and flowers of poison ivy with ether, and subsequent distillation of the solvent. The lead compound of this poisonous substance was found to be soluble in ether. The authors utilized this property to free the poisonous material from admixed non-poisonous substances. Lead compounds were first prepared by precipitating an alcoholic solution (of the ether extract of the drug) with lead acetate. The precipitate was washed with water, partially dried over sulphuric acid, placed in a Soxhlet apparatus and extracted with ether until the solvent came over colorless. A green solution was obtained, which was washed with water and decomposed with hydrogen sulphide. On evaporating the solvent, a black, poisonous "tar or gum" remained. Upon hydrolysis[20] with 2 per cent. sulphuric acid, this poisonous substance gave fisetin, rhamnose and gallic acid. The residue in the thimble was decomposed by hydrogen sulphide, shaken with ether and evaporated. A hard, brittle, yellow, nonpoisonous resin was given. The authors believe that the poisonous principle of poison ivy is a complex substance of glucosidal nature.

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[18] "Japanese Lac." Dissertation. A. B. Stevens, 17, 1905.

[19] Am. Chem. J., 36, 301–321. 1906.

[20] Acree and Syme: Am. Chem. J., 36, 316.

In our investigations we have used the juice from *Rhus vernix*, which was collected for the most part in October.

METHOD OF GATHERING THE JUICE.

With a knife having a V-shaped blade incisions 5 to 10 centimeters apart and about 5 mm. in depth were made around the trunk and larger branches, perpendicular to the axis of the stem. The juice, which oozes out abundantly, was collected by scraping out the grooves with a sharpened stick and discharging the adhering lac into a wide-mouthed bottle. By drawing the stick across a string stretched across the mouth of the bottle, the process is greatly facilitated. The juice fills the grooves in from 5 to 20 minutes after the incisions are made, and, unless gathered at once, is prone to overflow. The juice occurs as a thick, yellowish-white, sticky emulsion, which on exposure begins at once to change to brown and finally becomes black. If exposed to the air in an open container a black skin of oxidized substance forms over the surface, which protects the portions below from change. The juice has a peculiar odor, which seems to be characteristic of the sumac plant. By the above method of collection four trees of average size yielded a mean of 8·09 grammes of juice.

VARNISH PROPERTIES OF THE LAC.

We have made several experiments to ascertain whether this juice could be employed as a varnish like the Japanese lac. In 1815 Dr. Bigelow[21] had concluded that the juice of the American poison sumac might be used as a varnish. His method of application, however,* was not like that employed by the modern Japanese for their lacquered wares. We have employed a method somewhat similar to that of the Japanese as reported by Rein.[22]

Three smooth pine sticks were treated as follows: No. 1 was treated with a thin coat of lac, No. 2 with a thick coat of the same, while No. 3 received a coating of a mixture consisting of raw lac 70 and water 30. The sticks were permitted to remain at ordinary temperature in a closed vessel saturated with aqueous vapor (Scheibler desiccator charged with water) for twenty-four hours, then removed from the moist atmosphere and dried in an air bath at 50°. Three successive coats were applied at intervals of forty-eight hours, care being taken to maintain the order and treatment as given above. All three sticks became covered with a glossy, black varnish which could be readily polished. At the close of the experiments no appreciable difference was noted between No. 1 and No. 2. No. 3 dried more rapidly than the other two, but was otherwise similar. From these experiments and from other observations on the behavior of the lac (made while carrying out other experiments) we are led to concur with Dr. Bigelow in the belief that this juice could be employed as a varnish as a substitute for the Japanese article.

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[21] "Med. Botany," J. Bigelow, I, 101–102.

* See p. 4.

[22] "The Industries of Japan," J. J. Rein, 339–77.

Method of collecting the Lac from the American poison Sumac, near Ann Arbor, Mich.

CHEMICAL INVESTIGATION OF THE JUICE.

The juice was first strained through two thicknesses of dry cheese cloth to remove bark and other foreign matter. It was then stirred to insure a uniform composition. Its reaction was faintly acid to litmus paper; sp. gr. 0·99762 at 20° C./20° C.

Fifty grammes of the juice were placed in a steam distillation apparatus and distilled for five hours. The distillate was neutral to litmus. The emulsion in the distilling flask was scarcely changed in appearance. Twenty cubic centimeters of 10 per cent. H_2SO_4 were then added to the contents of the flask and the distillation continued for five hours more. The emulsion was broken up by this treatment, so that the mixture separated into two layers on standing and cooling. This distillate was very slightly acid to litmus. A trace of alkali was added to each of the distillates, after which they were evaporated separately to a small bulk. No acetic acid could be detected in either by tests with ferric chloride, sulphuric acid and ethyl alcohol, or arsenous acid and alkali. The distillates and the residue in the distilling flask were each separately shaken out with ether and the ethereal layers evaporated. Only mere traces of a pale yellow, oily residue remained from the distillates, while the contents of the distilling flask yielded about 45 grammes of a dark red, oily substance. None of these oily residues were poisonous. As the original material was highly poisonous, it is evident that the poisonous properties of the lac are destroyed by long-continued heating.

In our investigations we have employed two methods of testing for poisonous properties. The first was one used by Stevens[23] in his work on Japanese lac. A hole about 6 mm. in diameter was cut with a cork borer through a piece of gummed paper, the paper pasted on the arm and the suspected substance applied to the opening by means of a glass rod. In thirty minutes the paper was removed and the arm thoroughly washed with ether. If the substance were poisonous the spot became red and began to itch in twenty to thirty hours. The second method was one used by Dr. Jadassohn,[24] of the University of Bern, and reported by Tschirch and Stevens. It consisted in rubbing a drop of the suspected substance by means of a glass rod upon the inner surface of the ear of a rabbit. If poisonous, redness and swelling would appear in two to five or six days, followed by watery blisters and even by necrosis of the superficial layers of the skin. This condition would gradually disappear after about two weeks. In the case of the rabbit we have found the symptoms of poisoning by *Rhus vernix* similar in all respects to those caused by *Rhus vernicifera.*

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[23] AM. J. PHARM., 78, 63.

[24] Arch. Pharm., 243, 528.

SEPARATION OF THE RESINS FROM THE LAC.

A large sample of the strained lac was agitated with three volumes of 95 per cent. alcohol and poured on a filter. A brownish residue remained undissolved, which became darker on further exposure to the air. This residue was again shaken with alcohol and the process repeated until the filtrate became colorless. The insoluble portion was then washed with ether and dried in the air. It was a reddish-brown powder, only partially soluble in water. The alcoholic filtrate was evaporated under reduced pressure. It gave a dark, amber-red, oily liquid. These residues were reserved for further study.

To determine the composition of the lac by solubility, we employed a modification of the method used by Ishimatsu for Japanese lac. The method used is as follows: Five grammes of the strained lac were transferred from a weighing bottle to a mortar, triturated with 95 per cent. alcohol, allowed to settle five minutes, and the supernatant solution decanted through a tared Gooch crucible containing a mat of asbestos at least 1·5 centimeter in thickness. More alcohol was then added to the residue in the mortar and the trituration and decantation repeated. The insoluble residue was then transferred to the Gooch, washed twice with strong alcohol, once with ether, dried at 100° C. and weighed. The percentage insoluble in alcohol was calculated from this. To determine the portion insoluble in water the dried residue in the Gooch crucibles, together with the upper layers of asbestos, was transferred to a mortar and repeatedly triturated with hot water. The mixture was passed through the Gooch in which the alcoholic-insoluble residue was first weighed, the residue washed with hot water, dried at 100° and weighed. The residual weight represents the portion insoluble in water (or alcohol) and the loss in weight the portion soluble in water. The determinations were made in duplicate and in triplicate, the results usually being very concordant. From the tabulated results given below it will be seen that the composition seems to vary somewhat in different months and also from different parts of the tree, though the number of determinations made was insufficient to establish the extent of such variations. The specific gravity would probably vary also, but no experiments were made to verify this supposition.

Date of Collection.	Soluble in Alcohol. "Crude Resin."	Insoluble in Alcohol.	Insoluble in Alcohol.		Water (by difference).
			Soluble in Water.	Insoluble in Water.	
October 20, 1905 . . .	80·458	6·134	4·393	1·741	13·408
June 1, 1906	79·608	5·316	3·371	1·945	15·076
August 29, 1906	75·892	5·175	3·476	1·699	18·933
October 20, 1906 . . .	84·330	5·699	3·994	1·705	9·971
From near foot of trees, Nov. 3, 1906	80·223	8·018	5·393	2·625	11·759

For comparison we append a tabular statement of the composition of Japanese lac compiled from the reports of various workers.

Observer.	Soluble in Alcohol. "Urushic Acid."	Insoluble in Alcohol. Calculated by Stevens and Warren.	Gum.	Nitrogenous Residue.	Water and Volatile Matter (by difference).
Ishimatsu	58·24	8·59	6·32	2·27	33·17
Yoshida	85·15	5·43	3·15	2·28	9·42
Korshelt and Yoshida	80·00	8·00	4·69	3·31	12·00
			Insoluble in Alcohol.		
			Soluble in Water.	Insoluble in Water.	
Tschirch and Stevens	72·40	6·40	4·05	2·35	21·20

RESIDUE INSOLUBLE IN ALCOHOL.

The alcoholic-insoluble residue was dissolved in cold water as completely as possible (by trituration in a mortar with a small quantity of water) and filtered into a small quantity of alcohol. The resulting mixture was then poured into a large volume of alcohol. A white precipitate was produced which, after purification by repeating the above process several times, was found to have the properties of the gum obtained by Ishimatsu,[25] Stevens[26] and others from Japanese lac. In most respects it was similar to gum acacia under the same conditions. When prepared as described above, after filtering and drying, this gum possesses a powerful enzymatic action far exceeding that of acacia. Its aqueous solution rapidly changes freshly prepared tincture of guaiac to a deep blue color; with naphthol it produces a purplish-blue color, and with guaiacol a red color in 30 minutes; no effect was produced with vanillin and hydrochloric acid. An aqueous solution of the gum-enzyme does not convert starch paste into reducing sugars even by standing at 40° for 96 hours. An emulsion prepared from the gum-enzyme, water and the separated resins, blackens on standing like the fresh lac. An aqueous solution of the gum-enzyme is rendered inactive by boiling, though the fresh lac may be boiled in 95 per cent. alcohol for twenty minutes without becoming completely inactive. By boiling for eight hours with 2 per cent. sulphuric acid the purified gum yields a non-crystallizable, non-fermentable, dextro-rotatory sugar, which reduces Fehling's solution, but has no effect on Barfold's solution of cupric acetate. The purified gum contained appreciable quantities of nitrogen, which could not be removed by repeated precipitations with alcohol.

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[25] Manchester Lit. and Philos. Soc. [3], 249. 1882.

[26] "Japanese Lac." Dissertation. A. B. Stevens, 43. 1906.

It was found that the portion insoluble in water could not be completely freed from gumming or mucilaginous matters even by repeatedly triturating with cold water or by long-continued boiling with the same solvent. After the most thorough washing with water the insoluble residue (if unboiled) still produced a blue color when kept for several hours in contact with water to which a few drops of tincture of guaiac have been added. It was of a rich, chocolate-brown color, odorless and tasteless. When boiled for five hours with 2 per cent. sulphuric acid it yielded only the merest traces of reducing sugars without appreciable change in bulk. Probably these traces of sugar were derived from minute quantities of gummy matters remaining in the sample, which had failed to be removed by previous boiling and washing with water. When examined by the Lassaigne test and by the Kjeldahl quantitative method the substance was found to be rich in nitrogen. When boiled with dilute potassium hydroxide it darkened, forming a hard, brown-black substance which could not be powdered readily. Neither the gum nor the portion insoluble in water was poisonous.

CRUDE RESINS.

On evaporation the alcoholic filtrate from the lac gave a dark, amber-red, oily, non-volatile liquid, having a peculiar, not unpleasant odor, suggestive of the original juice. Evidently the odor of the plant is due to this oily substance. A drop of it, when allowed to sink into paper, produces a "grease-spot" like a true fat or oil. It is not a fat, however, as it produces no glycerol when saponified. It has a faintly acid reaction, a specific gravity of 0·9888 at 25° C./25° C., and is soluble in the usual solvents for resins and oils. When tested on the ear of a rabbit it was found to be very poisonous. It does not possess the properties of a glucoside or of an alkaloid. When dissolved in chloroform it unites with bromine and with iodine with great violence, with copious evolution of hydrobromic or hydriodic acids. On evaporating the solvent, a hard, black varnish remains, which is very lustrous and apparently durable.

Following the nomenclature adopted by Tschirch and Stevens in their work on Japanese lac, we have designated the alcoholic-soluble portions of the latter from *Rhus vernix* as *resins*, though they do not possess all the properties generally attributed to these bodies. In general, however, their properties were found to conform more nearly to the resins than to any other class of organic products.

SEPARATION OF THE LAC-RESINS.

In all proportions the crude resin was found not to be completely soluble in methyl alcohol, oil of turpentine, and petroleum benzin. With slight deviations, the method devised by Tschirch and Stevens[27] for the separation of the lac-resins of Japanese lac was used in our work. As finally adopted the method was as follows: 100 c.c. of the crude resins were dissolved in 900 c.c. of petroleum benzin (b. p., below 50°), forming a clear, dark amber-red solution. This was then slowly poured with stirring into 9,000 c.c. of cold benzin; a dense, brownish-gray cloud was immediately formed, which slowly subsided. At the end of twenty-four hours the supernatant liquid was clear and could be decanted with ease. A red-brown, semi-fluid mass remained, which was insoluble in fresh benzin.

BENZIN-INSOLUBLE RESIN.

The benzin-insoluble resin was washed repeatedly by covering it with benzin in a shallow dish and stirring with a glass rod until the washings became colorless. On drying the residue over H_2SO_4 under reduced pressure, a very viscous, red-brown, resinous, sticky mass, having the odor of the crude resin, was obtained. This substance, which amounted to 15·5 per cent. of the original, had a sp. gr. of 1·05167 at 25° C./25° C. It slowly hardened at ordinary temperature and was not poisonous. By heating for several hours at 110° C. it yielded a solid, dark-brown mass, which was insoluble in all ordinary solvents and was exceedingly difficult to pulverize. Analysis of the dried product gave the following results:

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[27] Arch. Pharm., 243, 518.

I.

0·3165 gramme gave 0·2121 gramme H_2O and 0·8683 gramme CO_2.

II.

0·3382 gramme gave 0·2326 gramme H_2O and 0·9295 gramme CO_2.

I.

0·5026 gramme gave 9·6 c.c. N at 23° C. and 739 mm.

II.

0·5014 gramme gave 9·5 c.c. N at 23° C. and 736 mm.

	I. Per Cent.	II. Per Cent.	Mean. Per Cent.
Hydrogen	7·527	7·693	7·610
Carbon	75·129	74·955	75·042
Nitrogen	2·092	2·067	2·079

The undried resin was soluble in alcohol, chloroform, glacial acetic acid and partially soluble in ether and methyl alcohol; it was insoluble in glycerol, water or petroleum benzin. When boiled with alcoholic KOH, the undried resin yielded a brown-black soap, soluble in water, and a brownish-black insoluble substance, but no glycerol. Aqueous solutions of this soap lather considerably when shaken, but have no detergent properties. The properties of the insoluble substance are similar to those of "oxyurushin" obtained by Tschirch and Stevens[28] from Japanese lac. Many attempts were made to determine its saponification number, but, owing to the great difficulty of determining the end reaction with indicators in the opaque, red-brown, soap solution, no satisfactory results were obtained. Numbers were found varying from 286·7 to 344·2 mg. of KOH. Litmus, phenolphthalein, methyl orange and alkali blue were all tried, both as external and internal indicators, but the exact point of neutrality could not be determined. The indirect method of McIllhiney[29] was also tried but without success, as the resin soap is not completely soluble in alcohol. This benzin-insoluble resin could not be acetylized by treatment with sodium acetate and acetic anhydride. It reacts with bromine, producing a black compound similar in appearance to that from bromine and the crude resin. It did not respond to the Lieberman-Storch[30] reaction for resins.

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[28] Arch. Pharm., 243, 523.

[29] Jour. Amer. Chem. Soc., 16, 408.

BENZIN-SOLUBLE RESIN.

On evaporation the solution in benzin gave a beautiful, clear, amber-red, oily, non-volatile liquid, amounting to 79·5 per cent. of the original resin. In color and odor it resembles the original resin, but its fluidity is greater and specific gravity less. Sp. gr. at 25° C./25° C. — 0·9693.

Its color is much lighter and its fluidity considerably greater than its companion resin, the benzin-insoluble portion. Its specific gravity is also considerably less. It was found to be soluble in aniline, amyl alcohol, acetone, acetic ether, benzol, petroleum benzin (b. p. below 50°), chloroform, carbon disulphide, carbon tetrachloride, ethyl alcohol, methyl alcohol, ether and toluol. Its alcoholic solution is optically inactive. It is very poisonous. It blackens with alkalies, like its companion resin, and yields a brown-black, soluble soap on saponification, without the liberation of glycerol. Its saponification number could not be obtained with exactness, as the same difficulties were encountered in determining the end reaction with indicators as was the case with the benzin-insoluble portion. Unlike the latter, however, it does not dry up appreciably on long standing or moderate heating. It unites with bromine and iodine, forming black, insoluble compounds with evolution of heat and liberation of the corresponding halogen acids. By subjecting the resin to the Grignard reaction,[31] using magnesium methyl iodide, it yields an abundance of methane, thus indicating[32] the presence of hydroxyl groups. The resultant magnesium organic halide blackens on exposure to air and is not poisonous. The resin contains no methoxyl or ethoxyl groups, as shown by negative results when tested by Zeisel's method.[33] It contains neither sulphur nor halogens. All attempts to crystallize it or to obtain a crystalline derivative were unsuccessful. By heating with acetic anhydride and dry sodium acetate, an acetyl derivative was obtained which was not at all similar to the parent substance. The new compound was a pale yellow, viscous, sticky liquid, amounting to 122·9 per cent. of the resin from which it was derived, and resembling honey in odor and appearance. Like its parent resin, it was darkened by alkalies and attacked by bromine. It was neither crystalline, volatile nor poisonous.

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[30] J. S. C. I., 1888, 136.

[31] Grignard: Ann. Chim. Phys. [7], 24, 433.

[32] Tschugarff: Ber. d. chem. Ges., 35, 3912.

[33] Zeisel: Monats. f. Chem., 6, 989.

An attempt was made to separate the benzin-soluble resin into two or more constituents by shaking with alcohol and petroleum benzin in immiscible proportions as follows:—25 c.c. of the resinous substance were dissolved in 300 c.c. of benzin (b. p. below 50° C.), and shaken out first with 66 per cent. alcohol in four portions 100 c.c., 25 c.c., 25 c.c., and 25 c.c. each; then with 85 per cent. alcohol in the same quantities and in the same order as above. On evaporation all three solvents yielded dark, amber-red fluid resins which resembled the parent substance in properties and appearance. The 66 per cent. alcoholic fraction amounted to but 15 c.c. from a 400 c.c. sample (3·75 per cent.), so that but few experiments were made with it. The other two fractions were each poisonous. The one soluble in 85 per cent. alcohol had a specific gravity of 0·9856 at 25° C./25° C.; the other a specific gravity of 0·9703 at 25° C./25° C. We are inclined to believe that no actual separation was made by this method, as each fraction yielded a black insoluble soap, together with some insoluble matter on saponification, and each gave a non-poisonous, non-volatile, acetyl derivative of similar properties. Many attempts were made to determine the saponification numbers of these products; but, as was the case with the benzin-insoluble resin, the soap solutions were too dark to determine the point of neutrality with exactness. By employing alcoholic KOH, numbers were obtained ranging from 238·7 to 321·4 for the resins, and from 459·9 to 510·0 for their acetyl derivatives. Barium hydroxide in hydro-alcoholic solution was also tried, but the results were no more satisfactory than with KOH. In this case the excess of barium hydroxide was determined gravimetrically after precipitating and filtering out the insoluble barium compound. The barium compound was bluish-gray in color and non-poisonous.

TREATMENT WITH LEAD ACETATE.

With an alcoholic solution of lead acetate the 85 per cent. alcoholic fraction and the benzin-soluble fraction, obtained as above, each gave a flocculent light-gray precipitate, which darkened considerably on standing. By slightly modifying the method of fractional precipitation used[34] on the resins of Japanese lac, we have obtained several fractions from the benzin-soluble portion of the resin. All these fractions were dark, brown-red, poisonous liquids, similar in appearance to the original resin.

The method as finally adopted was as follows:

The resin was dissolved in 95 per cent. alcohol, and an alcoholic solution of lead acetate added as long as a precipitate was formed. The precipitate was filtered out, washed with alcohol, suspended in fresh alcohol and decomposed by H_2SO_4. The excess of acid was removed by lead carbonate and the filtrate evaporated. The alcoholic filtrate from the first precipitate was treated with sulphuric acid, then with lead carbonate, filtered, evaporated to remove alcohol and shaken out with ether. Upon evaporating the ether, a dark red-brown residue was obtained, which, when dissolved, in alcohol, was readily precipitated by alcoholic lead acetate solution. This precipitate was treated like the first, and this process was repeated until no appreciable precipitate could be obtained with lead acetate solution. As these fractions were all so similar in appearance and properties, we believe that no actual separation was accomplished.

Syme and Acree[35] state that they separated the poison of poison ivy from impurities by extracting its impure lead compounds with ether in a Soxhlet apparatus and decomposing the resultant soluble extract with hydrogen sulphide. We have attempted to separate the resins of poison sumac by this method. Lead compounds were first prepared by precipitating an alcoholic solution of the benzin-soluble, poisonous resin with a hydro-alcoholic solution of lead acetate. The lead precipitate was washed with diluted alcohol by decantation, thrown on a filter, further washed with diluted alcohol and finally with hot water. It was then placed in a desiccator over sulphuric acid until partially dried (twenty-four hours), and extracted with ether in a Soxhlet apparatus until the solvent came over colorless. This required about ten hours. The insoluble residue in the thimble was removed, dried in the air and again extracted with ether. Only a trace of colored substance was removed. The insoluble substance in the thimble was then decomposed by H_2SO_4 in alcoholic suspension. A non-poisonous oil was given on evaporation of the solvent. The ether extract, which was of a deep green color in ethereal solution, was filtered and dried by immersing sticks of fused calcium chloride in its ethereal solution for twenty-four hours. On evaporation of the solvent it yielded a dark-brown, oily residue, which was poisonous and which contained 37·7 per cent. of lead. Further experiment showed that this residue was a mixture, consisting of an oily, lead-free, poisonous substance, soluble in alcohol, and a non-poisonous, true lead compound insoluble in alcohol. The lead compound (which was present in far greater proportion), when separated from its oily congener, suspended in ether, and decomposed by hydrogen sulphide, yielded a light yellow, ill-smelling oil, which was very poisonous. It is probable that this odor was due to compounds of hydrogen sulphide with ether, rather than to any characteristic of the poisonous substance, as the resin obtained by decomposing the lead compound with sulphuric acid had no such odor, but was at the same time poisonous. Three fractions were thus obtained; that from the ether-insoluble lead compound was non-poisonous, that from the ether-soluble lead compound was poisonous, and the lead-free oily, poisonous portion.

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[34] "Japanese Lac." Dissertation. A. B. Stevens, p. 20, 1906.

[35] Am. Chem. J., 36, 313–5.

A considerable quantity of the poisonous resin was obtained by suspending the green ether-soluble lead compound in alcohol and decomposing it by sulphuric acid. Excess of acid was removed by lead carbonate, and the liquid after filtration evaporated under reduced pressure. This residue was of a dark amber-red color, had the characteristic sumac odor and was very poisonous. Its lead precipitate, prepared by the method given above, was found to be almost completely soluble in ether when extracted for a long time in a Soxhlet apparatus. This second ether extract resembled the first in physical properties, but when decomposed by sulphuric acid, and subsequent evaporation of the solvent, the resultant resin was found *not* to be poisonous. As this substance was no longer poisonous and lack of time prevented the preparation of a fresh quantity of the material, no further work was done upon the resins.

A number of combustions were made upon the products obtained, but the results were not always concordant, although great care was used. This, together with the great variation in the saponification numbers and the variable amounts of insoluble matter produced by saponification, would indicate that the poisonous substance is a complex mixture rather than an isolated compound.

The following results were obtained by combustion:

PORTION SOLUBLE IN BENZIN WHEN SHAKEN WITH ALCOHOL.

I.

0·2574 gramme gave 0·2187 gramme H_2O and 0·7192 gramme CO_2.

II.

0·2747 gramme gave 0·2344 gramme H_2O and 0·7659 gramme CO_2.

I.

0·4716 gramme gave 5·2 c.c. N at 21° C. and 738 mm.

II.

0·4282 gramme gave 4·8 c.c. N at 20° C. and 732 mm.

	I. Per Cent.	II. Per Cent.	Mean. Per Cent.
Hydrogen	9·461	9·544	9·502
Carbon	76·203	76·040	76·122
Nitrogen	1·101	1·105	1·103

Portion dissolved by 85 per cent. alcohol when shaken with benzin.

I.

0·2833 gramme gave 0·2424 gramme H_2O and 0·8116 gramme CO_2.

II.

0·2499 gramme gave 0·2152 gramme H_2O and 0·7182 gramme CO_2.

I.

0·4645 gramme gave 5·1 c.c. N at 20·5° C. and 743 mm.

II.

0·4608 gramme gave 5·2 c.c. N at 21·5° C. and 738 mm.

	I. Per Cent.	II. Per Cent.	Mean. Per Cent.
Hydrogen	9·571	9·632	9·601
Carbon	78·131	78·380	78·255
Nitrogen	1·104	1·124	1·114

Combustion of the acetyl derivative from the portion soluble in 85 per cent. alcohol.

I.

0·2738 gramme gave 0·2043 gramme H_2O and 0·7207 gramme CO_2.

II.

0·2609 gramme gave 0·1923 gramme H_2O and 0·6819 gramme CO_2.

I.

0·5047 gramme gave 5·6 c.c. N at 26° C. and 736 mm.

II.

0·5391 gramme gave 5·9 c.c. N at 21° C. and 746 mm.

	I. Per Cent.	II. Per Cent.	Mean. Per Cent.
Hydrogen	8·342	8·249	8·296
Carbon	71·787	71·363	71·575
Nitrogen	1·084	1·119	1·101

The fact that all of the portions of resin obtained by fractional precipitation with lead acetate were poisonous, and that repeated precipitation and separation destroyed the poisonous properties, indicates that the benzin-soluble substance is not a compound, but that the apparently different substances obtained are the result of oxidation. This is supported by the fact that the final lead compound, like the ether-insoluble substance, is not poisonous. The small portion of lead-free oily substance indicates that a portion of the resin was occluded by the lead precipitate, thus preventing it from coming in contact with sufficient lead acetate to precipitate it. This is supported by the fact that after separation it is easily precipitated by the lead acetate.

Several experiments were made in order to compare the latex of poison ivy with that from poison sumac. The juice was collected from the ivy stems by a method analagous to that used for sumac. It occurs in ivy far less abundantly than in sumac, hence its collection is much more tedious. In color and consistency ivy lac resembles sumac lac very closely, but it is devoid of the peculiar sweetish odor of the latter. Qualitative tests, showed that it contains a brownish-red, poisonous resin soluble in alcohol, a non-poisonous gum-enzyme insoluble in alcohol, but soluble in water, and a third substance insoluble in either of these solvents.

Each of these substances possesses properties very similar to the corresponding substance in the latex of the sumac. The resin is apparently as venomous as its analogue in the sumac, but the gum-enzyme acts somewhat more slowly toward tincture of guaiac than does the sumac gum. No quantitative tests were made owing to lack of material, yet we believe that further work will show the proportions of the several ingredients of the two juices to be very similar.

THE FRUITS OF RHUS VERNIX.

The diameters of a considerable number of the fruits were measured. The values for the longer diameter lay between 4·91 mm. and 6·23 mm.; the shorter between 3·55 mm. and 5·04 mm. From these figures it will be seen that the size of the fruit varies considerably. One hundred specimens were selected at random from a large number and weighed. The stones were then removed and weighed. The following results were obtained from samples of 100 specimens each:

	I.	II.	Mean.
Fruit	2·4586	2·3836	2.4211
Stones	1·8596	1·7967	1·8286

The stones constitute 75·527 per cent. of the weight of the fruit.

A preliminary experiment showed that the ripened fruit contained an abundance of fat. The fat-content was determined as follows:

A quantity of the fruit, previously freed from stems, was ground to a No. 20 powder. About 25 grammes of the ground fruit were accurately weighed, placed in a Scheibler desiccator over colorless sulphuric acid, and dried to constant weight. The dried residue was then transferred to a percolator provided with glass stop-cock and percolated with petroleum benzin (b. p. below 65°) until exhausted. The solvent was then evaporated, the residue dried at 60° and weighed as fat. Fruit grown in 1905, which had been stored one year, gave a mean of 4·290 per cent. of moisture and 21·163 per cent. of fat, the latter being calculated on the undried sample as collected. Fruit grown in 1906, which had not been stored for any appreciable length of time, contained 4·951 per cent. of moisture and 19·225 per cent. of fat. No volatile oil was present in the fruits, as was shown by the fact that the desiccating acid remained colorless during the entire drying of the ground fruit. The crude fat is a hard, greenish-white solid, which has a faint, peculiar odor and a faint, somewhat tallow-like, rather unpleasant taste. Its specific gravity is, uncorrected, 0.9749 at 25° C./25° C. It melts at 38°=39° C. It is readily saponifiable, sap. No. 236.3, iodine No. 13.105. The crude fat is almost insoluble in cold alcohol; rather difficultly soluble in hot alcohol, from which a large proportion separates on cooling in splendid, white, crystalline flocks. After crystallizing once from benzin and twice from alcohol, the purified fat melted at

43·5° C. to 45·5° C., uncorrected. Its iodine absorption number (Hübl) is 3·39. On saponification with alcoholic potassium hydroxide the purified fat yields an excellent soap and an abundance of glycerin, 1 gramme requiring 236·7 to 237·4 mg. KOH.

Analysis of the purified fat gave the following results:

I.

0·2979 gramme gave 0·3187 gramme H_2O and 0·8173 gramme CO_2.

II.

0·2960 gramme gave 0·3136 gramme H_2O and 0·8119 gramme CO_2.

	I. Per Cent.	II. Per Cent.	Mean. Per Cent.
Hydrogen	11·966	11·851	11·908
Carbon	74·824	74·806	74·815

Eberhardt[36] has reported that Japan tallow consists chiefly of palmitin with small quantities of the glycerides of isobutyric and oleic acids, together with unsaponifiable matter. Geitel and van der Want[37] have further reported the presence of the glyceride of a dibasic fatty acid not previously described, which latter they call "Japanic acid."

Our analysis conforms more closely to myristin than to palmitin, as seen by the following:

	Found.	Calculated for Myristin.	Calculated for Palmitin.
H	11·908	11·990	12·239
C	74·815	74·724	75·861
O	13·277	13·286	11·900

Sumac tallow conforms closely in its physical and chemical properties to the published observations upon Japanese tallow. Further work may prove that the two are identical, or very similar in composition. Owing to lack of time, we have not continued the investigation of this substance.

The alcoholic mother liquors remaining after the first crystallization of the fat were concentrated and a second deposit of nearly colorless white fats was given. The process was repeated until, after four deposits of fat had been obtained and the mother liquors had been concentrated until no more alcohol remained, a small quantity of a dark, brownish-yellow fluid oil remained, from which no more solid fats could be separated. A preliminary examination of the stones from the fruits showed that they contained a small amount of a fluid fat, which probably accounts for the fluid fraction in the fat from the entire fruits as obtained above. The fat in the stones was determined as follows:

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[36] Inaug. Diss., Strassburg, 1883.

[37] J. Pr. Chem., 61, 151–5.

A quantity of the stones (free from wormy specimens) was freed from adhering fats by carefully scraping with a pen knife and subsequent washing in petroleum benzin of low boiling point. After drying in the air, the stones were ground to a No. 20 powder, the moisture determined by drying over colorless sulphuric acid, and the fat extracted from the dried substance by petroleum benzin, as was the case with the entire fruit. Calculated on the air-dried sample the stones contained 5·161 per cent. of water and 0·8489 per cent. of fat. This fat is a pale yellow, odorless, tasteless, non-poisonous, liquid oil. It is easily saponifiable and is apparently non-drying. The quantity obtained was too small to permit many determinations being made. Its iodine absorption number (Hübl) was 130, and its saponification number (one determination only) 267·7.

That the fluid fractions of the fat from the entire fruit are very largely derived from the stones rather than from the mesocarp, is shown by the following facts and experiments:

A quantity of the fruit was triturated roughly in a mortar in such a manner as not to break the stones. The mass was subjected to moderate pressure under warm water until most of the fat from the mesocarp was removed. The water was cooled, the fat collected, melted, strained and dried. Its iodine absorption number was 3·98 or nearly the same as that of the fat from the entire fruit (3 4), which had been purified by recrystallization from alcohol. The iodine number of the crude fat from the entire fruit was 13·10 and that of the fluid fat from the stones 130. Since the stones contain but 0·89 per cent. of fat (0·6 per cent. of the entire fruit), a simple calculation shows that the crude fat should contain 3·12 per cent. of the fat from the stones. With an iodine number of 130, this amount would materially increase the iodine number of a mixture, the other components of which are fats having low iodine equivalents.

No poisonous constituent could be detected in the ripened fruit. Neither starch, alkaloids nor glucosides were present, but the residues remaining after extraction of the fats with benzin were very rich in nitrogen.

Pfaff[38] states that he found 3·6 per cent. of crude "toxicodendrol" in the fruit of *Rhus toxicodendron*, but does not give the amount in *Rhus vernix*, though we are led to believe that he found it in the fruit of this species. He says: "It (toxicodendrol) was found in all parts of the plant—stems, branches, roots, leaves and fruits—its amount, however, varying, the fruit and leaves containing most. The oil was found in *Rhus toxicodendron* as well as *Rhus venenàta*" (*Rhus vernix*). For the extraction of his "toxicodendrol" we believe that Pfaff must have employed fruit which had been collected in a green state or contaminated with other parts of the plant, for we have repeatedly examined the fully ripened fruit of both these species and have been unable to find any traces of poison in either.

As before stated, we have found 19–21 per cent. of fat in the fully ripened fruit of *Rhus vernix*, and from the mature fruit of *Rhus radicans* (deprived of their pericarps) we have obtained 33·4 per cent. of a greenish-white, solid fat, which closely resembles that from sumac fruit, but is slightly softer and less brittle. Its specific gravity is 0·9577 at 25° C./25° C.; saponification value, 238·55 mg. KOH; and its iodine absorption number 30·119. When purified by one crystallization from hot alcohol it is a hard, brittle, white, solid fat, similar in appearance to that obtained by similar treatment from the crude fat of the sumac, although slightly softer and less brittle. The purified fat melts at 42° to 42 5° C. (uncorrected). Meyer[39] states that the wax from *Rhus toxicodendron* (*R. radicans*) melts under all conditions at 42° C., and is, therefore, probably a pure substance. We have found that the crude fat as extracted from the fruit is not a pure individual substance, since a single crystallization from alcohol not only yields a product that is much whiter, harder, and more brittle than the crude fat, but lowers its iodine number from 30·1 to 15·8. Probably its iodine number could be lowered still further by repeated crystallizations.*

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[38] Jour. Exp. Med., 2, 188.

[39] Arch. Pharm., 25, 120.

* Read before the Scientific Section of the American Pharmaceutical Association, September, 1907.

SOME ASSAYS OF DRUGS COLLECTED FROM CULTIVATED PLANTS.

By John R. Rippetoe, P.D.

Owing to the increasing scarcity, higher prices, and the poor quality of many of the wild medicinal plants, any data as to their cultivation for commercial purposes is usually looked upon with interest.

For the past few years the supply of belladonna has been steadily decreasing, and at the same time it has become poorer in quality. Formerly the chief supply was collected in England and Germany from wild plants, and judging from the macroscopical examination of samples of the root from German markets, they were collected irrespective of the season or age of the plant. The alkaloidal content of the root upon assaying seldom averages over ·4 per cent. mydriatic alkaloids, some averaging ·30 per cent., and in one sample as low as ·20 per cent. About 10 to 15 per cent. of the samples run as high as ·5 per cent., one sample being received that assayed ·61 per cent., possibly from cultivated plants properly collected. The leaves usually are of better quality, the average yield of total alkaloids of ten samples being ·35 per cent. Leaves procured in the English market assay very good, one sample received assaying ·76 per cent.

The cultivation of belladonna has been undertaken at various places in this country and, according to reports, with very good success. Last year (1906) I undertook the cultivation of a few plants as an experiment in the Shenandoah Valley of Virginia, and the results so far have been quite satisfactory.

The seed was planted in hot-house boxes about February 1st, and the plants were transplanted several times before finally setting them out in the open, which was in the middle of June. The young plants are very tender, and the loss in handling from the first box to the field is usually very great.

By September 1st the plants were 18 to 30 inches high, the season up to this time being very wet, raining almost every day. By October 1st several of the plants were 40 inches high, and a sample of leaves collected at this time assayed ·32 per cent. mydriatic alkaloids.

About two-thirds of the plants withstood the winter, and with the first signs of spring began to grow. Last year each root produced only one stem, but this year each root had three stems about equal in size. By the middle of July the plants averaged 4 feet in height and by October 1st about 65 inches. A sample of leaves collected in July, when the plants were flowering, assayed 0·68 per cent. An average plant, collected October 1st, produced 7 ounces of dry leaves, assaying 0·48 per cent., and 5 ounces dry root, assaying 0·38 per cent.

Although the samples represent a very short period, it is very encouraging to note the high alkaloidal content of the leaves from the second year's growth, and also the quantity which in the moist condition of the commercial drug would possibly weigh 7½ to 8 ounces. The root is below the U.S.P. requirement, but is up to the average of the drug on the market.

The plants are in a sandy soil, in rows 3 feet apart, and almost completely shaded by peach trees.

EMULSION OF CASTOR OIL.

By M. I. Wilbert.

Numerous attempts have been made, from time to time, to present castor oil in a form that would be quite, if not entirely, unobjectionable.

Additions of alcohol, volatile oils and of carbon dioxide have all had their advocates, and the various forms of emulsions have repeatedly been discussed in and out of meetings.

Emulsions made with acacia, tragacanth, yolk of egg or casein are generally objectionable on account of the viscid character of the resulting preparation. Saponin has been objected to on account of its possible deleterious effect, so that practically the only substance that offers a fair solution of the emulsion problem is soap.

Soap has been recommended from time to time and has quite recently been discussed rather thoroughly in several of the European pharmaceutical journals. The following suggestions are, therefore, not to be considered as embodying anything new or original.

A simple formula for a satisfactory soap emulsion of castor oil might be given as follows:

Castor oil	50·0 c.c.
Powdered castile soap	1·5 grammes.
Spirit of peppermint	3·0 c.c.
Solution of saccharin, N. F.	1·0 c.c.
Distilled water, to make	100·0 c.c.

To the powdered soap, in a clean, dry mortar, add the castor oil and the spirit of peppermint, mix well and gradually add, with constant stirring, the solution of saccharin and enough water to make 100 c.c.

The resulting mixture is a white, limpid emulsion that separates partially on long standing, but will readily mix again on shaking.

For an extemporaneous preparation a solution of soap, such as that for which a formula was published on page 415 of this Journal for October, 1907, will be found to be preferable.

The procedure for making an emulsion with liquid soap would be about as follows:

To 50 c.c. of castor oil and 3 c.c. of spirit of peppermint, in a suitable bottle, add 5 c.c. of liquid soap, mix thoroughly by shaking, and add the solution of saccharin and enough water to make 100 c.c. The solution of saccharin may, of course, be replaced by an equivalent quantity of syrup.

NASCENT FERROUS CARBONATE.

By M. I. Wilbert.

A formula for a solution of ferrous carbonate was given in this Journal some time ago (September, 1907). Since that time a proprietary preparation has been brought to my attention that appears to offer some advantages and is certainly more palatable than the solution referred to above.

In this preparation, that is claimed to be the result of extensive studies and costly experiments, advantage is taken of the solvent and inhibiting properties of glycerin.

A preparation having all of the properties of the proprietary article may be made by dissolving the requisite amount of granulated ferrous sulphate in water, diluting with glycerin and adding to this solution a solution of the requisite amount of potassium carbonate in the remaining portion of glycerin.

A detailed formula would be as follows:

Ferrous sulphate	3·2 c.c.
Distilled water	1·5 c.c.
Potassium carbonate	1·6 grammes.
Glycerin, to make	100·0 c.c.

Each 5 c.c. of the resulting solution would represent the equivalent of one pill of ferrous carbonate.

The resulting solution is clear, transparent and dark green in color. It decomposes readily when exposed to air and moisture, and should be directed to be liberally diluted when administered.

FIFTY-FIFTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

BY FLORENCE YAPLE.

SCIENTIFIC SECTION.

(*Continued from page 498.*)

THE PHYSICAL CONSTANTS OF THE CHEMICAL COMPOUNDS OF THE UNITED STATES PHARMACOPŒIA.

By Atherton Seidell.

The author compared the constants given in the United States Pharmacopœia with those given in literature, and found that there is most variation in solubilities. He thought that in giving solubility a statement should be made of the parts by weight. He also said that when constants are determined they should be on chemically pure substances rather than on United States Pharmacopœia pure substances.

Professor Coblentz remarked that the solubilities given in the United States Pharmacopœia are those of the official chemicals. The author then remarked that he thought if the constants were absolute, they would be helpful in determining the purity of the substances.

DATA RELATING TO FLUIDEXTRACTS.

By Joseph Feil.

The author prepared a table showing eighty different fluidextracts, with 11 columns of figures, as follows: Columns 1, 2, 3, 4 and 5—maximum alcoholic strengths taken from the labels of five manufacturing houses. Column 6—percentage of alcohol in the official menstruum. Column 7—average percentages of moisture in the ground drug, determined at 105° C. Column 8—average percentages of "extractive," some compiled and some determined. Column 9—percentages of alcohol remaining in the finished preparations, calculated by assuming that 100 grammes "extractive" measures 60 c.c. Column 10—the average of Columns 1 to 5 for comparison with Column 9. Column 11—the difference between Columns 9 and 10.

THE IDENTIFICATION OF TINCTURES BY CHEMICAL MEANS.

By Frederic E. Niece.

The author called attention to the desirability of having chemical means of identifying tinctures, and submitted qualitative tests for the identification of a number of official tinctures.

SCOPOLA VERSUS BELLADONNA.

By A. R. L. Dohme.

The author gave several reasons why he considers that scopola should be used indiscriminately for belladonna.

THE FOOD VALUE OF PREDIGESTED FOODS.

By A. R. L. Dohme and H. Engelhardt.

The authors criticized the method and results of the chemists of the Council on Pharmacy and Chemistry as published in the *Journal of the American Medical Association* for May 11, 1907.

The following are the newly elected officers of the Section: chairman, Virgil Coblentz; secretary, Charles E. Vanderkleed; associate, Joseph Feil.

COMMERCIAL SECTION.

H. D. Knisely, chairman; Charles H. Avery, secretary; associate chairmen: J. R. Francis, Charlotte E. Stimpson and William C. Powell.

The sessions of this Section were held on Thursday, simultaneously with those of the Scientific Section.

The chairman reviewed the conditions of the past year, and said, among other things, that the Indianapolis injunction decree would in his opinion make no material change in business.

After the presentation of the secretary's report, the following subjects were taken up:

The Science of Commerce as Applied to Pharmacy. Henry P. Hynson.

How to Make a Drug Store Attractive and Advertise Side Lines. William Mittelbach.

A Preachment on the Inventory. Harry B. Mason.

Mr. Mason contended "that the day has come when the American pharmacist must do business in accordance with twentieth century methods." This, he said, "is simply the lesson of evolutionary science." He then pointed out that "the inventory forms the very basis of the structure," and gave directions as to the manner of procedure.

Fire Insurance from a Pharmacist's Standpoint. Frank H. Freericks.

Symposium on Some National Formulary Preparations.

Elixir Terpini Hydratis cum Heroina. Jacob Diner.

Liquor Antisepticus and Antiseptic Powder. Joseph L. Lemberger.

Mistura Chlorali and Potass. Bromidi Comp. and Syrupus Hypophosphitum Comp. Henry P. Hynson.

One Preparation and How I Made It a Success. William C. Alpers.

To Prevent Store Loafing. J. B. Moore.

The Rural Free Mail Service of 1912. James L. Cowles, Secretary Progress Postal League.

More to Think About. William F. Kaemmerer.

The author presented forcible arguments to show that the question of shorter hours and better pay for drug clerks is one of the most vital questions in pharmacy, and pointed out its relation to the labor question. With equal propriety he might have placed it in the class of humanitarian questions.

The Cocoa Bean Situation in the Summer of 1907 from the Commercial Standpoint. By A. M. Hance.

The new officers chosen were as follows: Chairman, Jacob Diner; secretary, G. O. Young; associate chairmen: A. V. Pease, C. W. Benfield and Frank H. Carter.

HISTORICAL SECTION.

Ewen McIntyre, chairman; E. G. Eberle, secretary; Edward Kremers, historian.

This Section held an interesting session on Friday morning, when the following programme was presented:

Report of the chairman. Report of the secretary. Report of the historian. A Short Sketch of Albert E. Ebert, by C. S. N. Hallberg. Professor Hallberg stated that by action of Council copies of the Ebert Memorial Volume would be furnished each member of the association, and that copies would also be furnished pharmaceutical institutions. Henry Canning, by S. A. D. Sheppard; William W. Goodwin, by S. A. D. Sheppard; Missouri and the A. Ph. A. in 1867, by H. M. Whelpley; Some Prominent American Pharmacists (illustrated with lantern slides), by H. M. Whelpley; John Milhau, by Rene Leon de Milhau (his grandson); George D. Coggeshall, by Ewen McIntyre; E. R. Squibb; Charles Ellis, by Joseph P. Remington; Henry J. Meninger, by Ewen McIntyre; Paul Baluff, by Gustav Ramsperger; The History of the New Jersey Pharmaceutical Association, Continued, by E. A. Sayre; A Bibliography of the London Pharmacopœia, by Edward Kremers; A Contribution from William J. Schieffelin; Documents Pertaining to the Anniversary Number of the Druggists' Circular, by F. B. Hays; Photographs of Pharmacists, by Ewen McIntyre; Pharmaceutical Notes from Nuttall's Journey into "Arkansa" Territory, by Edward Kremers; Bulletin Lloyd Library, by J. U. Lloyd; Some Pharmaceutical Data before and during the Civil War, by Edward V. Howell; Notes on Historical Aspects of the Drug Trade in New York, by Caswell A. Mayo; Brief Historical Sketch of the University of Texas and its Department of Pharmacy, by E. G. Eberle; Brief Historical Sketch of Baylor University and its Founder, Rufus C. Burleson, and its College of Pharmacy, by E. G. Eberle; Various Publications of Texas Schools, etc., by E. G. Eberle; Lebanon, Past and Present, with other Rhymes, by J. H. Redsecker.

Officers were chosen as follows: Chairman, E. V. Howell; secretary, E. G. Eberle; historian, Edward Kremers.

BIOGRAPHICAL SKETCH OF THE LATE JAMES THORNTON SHINN.[1]

By John F. Hancock.

James T. Shinn was born January 9, 1834, in the city of Philadelphia.

His parents belonged to the Society of Friends, and they instilled in his young mind principles calculated to make a strong character.

He was educated in the Friends' Select School, of Philadelphia, and the boarding school at Westtown, Chester County, Pa.

The good influences of home and school gave him a training, morally and intellectually, that fitted him for the responsible positions which he filled in after life and made him the useful man he was.

He possessed rare qualities of mind and heart, which, with his commanding presence, inspired confidence and respect. He was a genial companion, cultivated and well informed on general topics.

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[1] For portrait of Mr. Shinn, see frontispiece.

In his dealings he was honorable and just; a man of excellent judgment, accurate and prompt in business.

He was advanced in the autumn of life, but with his faculties well preserved, and still actively engaged with works of benevolence—when,

> "Like a shadow thrown
> Softly and sweetly from a passing cloud,
> Death fell upon him."

On the morning of October 4, 1907, on arising to perform his regular duties of the day, he was taken suddenly ill, and in a brief space of time his noble spirit fled from its human habitation.

Imagination suggests that such a death is most terrible to the family and friends who survive.

It has been said of Daniel Webster that, when dying, in his last breath he uttered, "I still live."

We believe that the real individuality of James T. Shinn still lives, and we are left to treasure his memory and emulate his example.

Those who paid their last respects to his mortal remains must have been impressed with the beautiful tributes to his memory by speakers who had known him for years.

His sudden death was a great shock to his many friends, but to those who will feel their loss most keenly—his wife and daughter—we express our heartfelt sympathy.

They have much to console them, however, in the purity of his character and useful life.

> "To thine own self be true;
> And it must follow, as the night the day,
> Thou canst not then be false to any man."

He was a representative pharmacist, who leaves a clean record.

His memory should be held up in the College of Pharmacy as an example for the youth who are being educated for the practice of pharmacy. The wisdom of his example should be a beacon to the young graduate.

He taught pharmacists a valuable lesson, viz., that they could best serve their business interests by cultivating the mind to a benevolence broader than the confines of their chosen occupation, and to economize time that it may be employed in other pursuits, will improve their ability to practice pharmacy.

We have been informed that Mr. Shinn was cordial and friendly to his competitors.

We know that he was loyal and useful to his Alma Mater and had the confidence and respect of his colleagues in the college.

The same applied in the other organizations with which he was actively identified.

His labors of love, outside of pharmacy, when he was active in that business, did not cause him to neglect the duties of his store. He enjoyed the confidence of his patrons and the medical profession and was financially successful.

We had business dealings with him for quite a number of years without the slightest misunderstanding in a single case.

In his conduct of business he was above the tricks of trade.

During his five years of apprenticeship with the then well-known retail and wholesale drug firm of Charles Ellis & Co., he matriculated in the Philadelphia College of Pharmacy, from which he was graduated in 1854. His brother, Samuel E., was graduated from the same college in 1850, but died soon after entering business, at the northeast corner of Broad and Spruce Streets. After his death, James T. became his successor (in 1855), and in 1863 removed to the southwest corner of Broad and Spruce Streets, where the pharmacy still exists under the firm name of Shinn & Kirk. Mr. Shinn retired from the practice of pharmacy several years ago.

He was trained under the old regime, but when pharmacy began to drift toward more active commercialism, he became dissatisfied, and being financially able to retire, he left the occupation in which he had manifested the greatest interest for many years. He always entertained the highest ideals of the intellectual and moral status of pharmacy, on which subject we frequently conversed.

But Friend Shinn could not be idle, therefore he sought other employment.

His practical eye soon found objects of interest in which he might be useful and still have sufficient time to enjoy the comforts of his model home. In his beneficent work he was encouraged by his good wife and daughter, who were engaged in other works of charity.

We remember, on our last visit to his hospitable home, the interesting account he gave of his vacant lots enterprise, in which the poor were assisted in their effort to help themselves, by the cultivation of vegetables which they sold to the people of Philadelphia. In this work he and Mrs. Shinn were deeply interested and pleased because of the good results. In relating his experiences it was a modest recital of facts, devoid of vanity.

At the funeral, one of the speakers individualized the various institutions in which he was interested and actively employed, and demonstrated his good judgment and great capacity for such work.

He was not a seeker after office, but would not refuse his services in commendable enterprises.

He was actively identified with the Philadelphia College of Pharmacy for many years, as one of the Board of Trustees, and had been its treasurer since 1894. He was also interested in the AMERICAN JOURNAL OF PHARMACY, and with his pen had contributed to its pages. He was also a Commissioner of Pharmacy for twelve years, from the time of the passage of the Pharmacy Law.

He joined the American Pharmaceutical Association in 1860 and at that meeting was elected its secretary. He served on committees and was a forceful speaker at its meetings. In 1880 he was elected president. At the time of his death he was president of the Board of Managers of the Catharine Street House of Industry, president of the Association Center of the University Extension Teaching, and president of the Philadelphia Vacant Lots Association, secretary of the Pennsylvania Hospital; also, a manager of the Philadelphia Fuel-Savings Society and the Indian Rights Association.

We became acquainted with Friend Shinn in 1863 at the meeting of the American Pharmaceutical Association, and in after years we met at the annual meeting of the association, but it was not until the meeting of the association in Philadelphia, in 1876, that his worth was properly appreciated. After that time acquaintance ripened to warm friendship.

We never knew a man more honorable, just and true, and never felt the loss of a dearer friend; in which sentiment we are sure others will share.

CORRESPONDENCE.

AMERICAN PHARMACEUTICAL ASSOCIATION.

DEAR SIR :—At the recent annual meeting of the American Pharmaceutical Association the undersigned was directed to send you a copy of the following resolutions:

WHEREAS, The American Medical Association, the American Pharmaceutical Association and the National Association of Retail Druggists, together with many State and local organizations and journals in both professions have been for some years endeavoring to bring about a return to the practice of medicine based on the Pharmacopœia; and,

Whereas, The medical colleges are represented on the Committee of Revision of the U. S. Pharmacopœia; and,

Whereas, It is manifest to the thoughtful men both in medicine and pharmacy that a very large number of medical men might be better informed regarding the Pharmacopœia as a book of reference and standards. Be it, therefore,

Resolved, That it is the sense of the American Pharmaceutical Association in convention assembled, that a great advance in the ethical practice of medicine and pharmacy will be made when the medical colleges make the Pharmacopœia a prescribed text-book or book of reference and require a familiarity with it in their examinations.

Resolved, That we request the governing authorities of all medical colleges in the United States to put into force such a ruling in their respective institutions as will insure in future classes a well-grounded knowledge of materia medica and Pharmacognosy, as set forth in the Pharmacopœia.

Resolved, That the General Secretary be directed to transmit a copy of these resolutions to each medical college in the United States and to the medical and pharmaceutical press.

Yours very truly,
Chas. Caspari, Jr.,
Baltimore, October, 1907. *General Secretary,*

INDIA'S SPICES AND CONDIMENTS.

ALIMENTARY VALUE AND USE OF ORIENTAL SEEDS AND LEAVES.

In reply to a request for information by New England educational interests on the spices of India, Consul-General W. H. Michael writes as follows from Calcutta:

The terms spices and condiments are applied to a class of substances which possess aromatic and pungent properties, and are mixed with food for the purpose of exciting the appetite. Many articles of this class not only assist digestion but by tempting the palate increase the amount of food consumed and thus stimulate a flagging appetite. To the native of India spices and condiments are indispensable, and in their production India has always been noted, if not preeminent, her ports having been resorted to by the nations of the West from prehistoric times in search of these commodities. India possesses a very large export trade in spices, which amounted last year in pounds to 11,008,000, and in value to about $46,666,665. This does not include cutch and turmeric, which although used in India as spices are exported mainly for industrial purposes. Cutch is used for tanning and dyeing, but is also used as a drug, especially in America. In India it is used as an ingredient in the mixture of betel nut, which the natives are so fond of chewing. Turmeric is a handsome herbaceous plant that is cultivated all over India, its yellowish tubers producing a yellow powder used by natives to some extent as a condiment, but which is most valuable as a chemical to detect the presence of alkalies. Cutch is produced largely in Bengal, Bombay, Madras Province, and in Burma, and from which places the average annual exports amount to 221,986 pounds, valued at $1,111,335. Of this the United States takes on an average about 70,000 pounds.

CARDAMOM AND THE BETEL NUT.

Both the greater and lesser cardamom, which are natives of Nepal, grow all over India where cultivated, and are much used in the preparation of sweetmeats by the natives on account of their cheapness. They are also used as ingredients of the pan or betel leaf preparation. Lesser cardamom grows wild in the mountains of southern India. It is considered as the most valuable of all the Indian condiments. The natives use it for flavoring purposes, and also for pan.

The betel nut is also called areca, and, while a native of China, it grows throughout tropical India. It is indispensable in the preparation of pan, and is probably the most popular nut with the native that grows in India. Everywhere on streets of India's cities one will see women squatted down mixing betel nut or pan, and offering it for sale to the passers-by. The mixture consists of betel nut, cinnamon, cardamom, and catechu in certain proportions wrapped up in a leaf of the betel tree. The "wad" is put into the mouth by the natives much as the old-time tobacco chewer put the "cud" into his mouth, and they chew it much in the same way. The effect is stimulating to the nerves, and stains the lips and tongue a deep blood red. The quantity of betel nuts imported into India on an average from East Africa, Mauritius, Ceylon, Straits Settlements, and other countries, average annually about 39,520,000 pounds, valued at $1,235,655, while the export amounts to only 91,700 pounds, valued at $12,350. This shows what a tremendous consumption exists in India of betel nut; for it must be remembered that India produces much more than she imports of this article.

The leaves of the piper betel mixed with catechu, areca nut, and lime, and flavored with spices makes the pan so generally used. The trade in the leaf is entirely local.

The seeds of the various forms of mustard, rape, and cole are used in India as condiments and grow in great abundance. Onions and garlic and celery are produced to a large extent.

CHILLIES, CARAWAY, ROXBURGHIANUM, CLOVES, ETC.

The chillie, or capsicum, of several varieties are natives of America, but are grown all over India, and while not used as generally as in Mexico are consumed in large quantities by the natives of India. The caraway plant grows wild in Kashmir, now really a part of India, and is cultivated as a cold season crop on the plains: The true Bishop's weed is cultivated extensively in Bengal, Punjab, and south Deccan. The Roxburghianum plant, which resembles parsley, is eaten much in the same way as parsley, and the seed is used in flavoring curry. Cloves are cultivated mainly in south India, which supplies the market or bazaars of northern India, together with some importations from Ceylon.

There are probably three species of cinnamon produced in India and Ceylon. The cocoanut grows abundantly in India, principally in the southern part, along the coast. Coriander is a much prized condiment in India, and is almost indispensible in making a first-class curry. It is cultivated throughout India.

SAFFRON, CUMIN, GINGER, TURMERIC, CRUCIFERÆ, MINTS, AND NUTMEGS.

Saffron is grown in India to a limited extent, and is used in coloring and flavoring food. Cumin is used as spice with which to flavor curry, and is one of the oldest spices known to the natives of the country. It is most successfully cultivated in the provinces of Rajputana and the Punjab, in northern central India, and in the Deccan, southern India. Mango ginger grows wild in Bengal, India, and in the Himalaya Mountains as high up as 6,000 feet. It is used as a condiment and also as a vegetable. The turmeric is a native of south Asia, and is grown all over India for its rhizome, or root stock, which, when dried and reduced to a powder, is used as a spice in curries.

Cruciferæ are cultivated all over north and central India, and on the western Himalaya Mountains as high up as 10,000 feet. The seeds are crushed and the oil extracted therefrom, and the powder of the seed is used as a condiment. The oil is the most valuable part of the cruciferæ. Mint, called sometimes the marsh mint, grows abundantly in the western Himalayas, and is eaten by the natives as a condiment. Peppermint grows well when it receives proper care. Spearmint grows all over the plains of India, and is much used in curries and other forms of food. Nutmeg and mace are cultivated in south India. In parts of India there is a nut 1½ inches long and a half inch thick, which is much like the true nutmeg, and is offered for sale as such, but it is not so good.

PEPPER, MISCELLANEOUS ARTICLES, AND EXPORTATIONS.

Long pepper is a perennial shrub of eastern India, Nepal, and east Bengal and Ceylon. The fruit of this shrub is dried and used as a spice. The black pepper, which is a climber, also grows well in India. The berries of the black pepper are eaten as a condiment in curry, and in powder form, is the black table pepper of the West.

The following spices and condiments are also grown in India, either as indigenous or introduced plants: Fennel, hops, black cumin, sweet basil (the seeds and leaves of sweet basil are eaten by the natives of India as a cooling condiment); dill, used in curry; anise, introduced from Persia by the Mohammedans and is used lavishly in India "sweets;" cubebs, a native of Java and Sumatra; fenugreek, which grows wild in Kashmir and the Punjab, and cultivated generally on the plains of India; scitaminea, native of India, and used as a spice; ginger, cultivated in India for its root, but not known in its wild state; spikenard, which grows all over India, and is used as a medicine for coughs, and the leaves for food, usually known as "greens."

Exports of spices from India for 1906–7 dropped from $3,000,000 in value in 1905–6 to $2,000,000 in 1906–7, a decline of 33.69 per cent, which is stated to be due principally to the contraction in the exports of pepper, which fell off 9,499,000 pounds, valued at $1,000,000, The export of ginger declined in value $95,000. This article, however, brought a higher price during the last year, selling on an average at nearly 5 cents per pound. The export of chillies increased during the year 22.37 per cent. in quantity and 12.34 per cent. in value.—*Daily Consular and Trade Reports*, October 12, 1907.

A PLEA FOR UNIFORMITY IN THE NOMENCLATURE OF ALKALOIDS AND THEIR DERIVATIVES.[1]

In a letter to the *Pharmaceutical Journal* (August 10, 1907, p. 233), Dr. Gordon Sharp, of Leeds, writes as follows:

Some years ago it was the custom in Great Britain to make all alkaloids and their derivatives end in "ine," while glucosides, resins, and principles not alkaloids, were made to end in "in." Now all is hopelessly mixed up, and no order is observed—just as is the case in German literature. If the Germans send us over a new derivative of an old alkaloid, editors, chemists, physiologists, and pharmacologists (not to speak of the downtrodden clinician) seem to think it should be written as our Teuton friends think. To take a few examples: In the same sentence I read eucaine and cocain (both alkaloids) and heroin and dionine, two morphine derivatives which came to us from Stockman and Dott, but neglected till an enterprising German firm took them up. To continue, the more or less pure ergot alkaloids are written, cornutin-Keller, cornutine-Kobert, chrysotoxin, secalintoxin, sphaceletoxin, ergotoxine, hydroergotinin. I could go on multiplying the list, but it is needless. It would be much simpler if investigators paid attention to the old rule, so that when one came across a new name ending in "ine" we should know that it was alkaloidal in nature.

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[1] The practice does not seem to be any better in the United States, an instance having recently come to notice where the author in the same paper used the erminations "in" and "ine" for the same alkaloid.—EDITOR.

OIL OF JUNIPER.

Hansen and Babcock (*Jour. Amer. Chem. Soc.*, 1906, p. 1198) obtained from the leaves and branches of *Juniperus communis* 0·15 to 0·18 per cent. of a bright yellow oil, which had a characteristic juniper odor, and gave $d_{20}°$ 0 8531. Schimmel & Co. (Report, April, 1907) examined a Russian oil which behaved as follows: $d_{15}°$ 0·8675; $a_D + 8° 46'$; ester no. 11·4; soluble in 6 or more volumes 90 per cent. alcohol with slight turbidity.

THE AMERICAN PHARMACEUTICAL ASSOCIATION.

PHILADELPHIA BRANCH.

The first stated meeting of the Philadelphia Branch of the American Pharmaceutical Association, for the season 1907–1908, was held on the evening of Tuesday, October 1, 1907, at the College of Physicians.

The programme for the evening was a discussion of the U.S.P. and N.F. Propaganda.

For the Committee on Exhibitions, the chairman, Dr. H. C. Wood, Jr., reported that the exhibition of official preparations that was made under the auspices of the local branch, at the annual meeting of the American Medical Association, at Atlantic City, in June, was generally acknowledged to have been an unqualified success.

It was generally conceded that the exhibition by the Philadelphia Branch was by far the most attractive, certainly the most frequented, exhibit in the exhibition hall at Atlantic City. That it was popular and effective is shown by the fact that it was heartily praised by the better class of physicians, and as heartily and thoroughly condemned by the makers of nostrums and their friends.

Dr. Wood recited some personal experiences that he had had in connection with the exhibition, and in conclusion said that he felt satisfied that the work that had been inaugurated by the Philadelphia Branch would be taken up and elaborated on by other associations.

The secretary-treasurer reported that, in addition to the exhibition at Atlantic City, a number of the preparations had also been shown at several of the branch meetings of the Philadelphia County Medical Society, and that the whole collection had been loaned to the

Pennsylvania Pharmaceutical Association for exhibition at the meeting of the Medical Society of the State of Pennsylvania, at Reading, Pa., September 23d to 26th.

Mr. Ambrose Hunsberger, in a paper entitled, "The Need for Personal Work," expressed the opinion that personal equation was an important factor in the development of the professional side of pharmacy. In pharmacy, as in all professional pursuits, study must be continuous and constant. The man who has given up the study of the science of his profession has begun to decline.

The battle for supremacy is on in earnest, and the pharmacist, to maintain his position, must be able to refute the charge of incompetence that is now being heard on all sides. To succeed as he should, he must produce tangible evidence that he is capable of giving better service, to the physician and his patients, than is the manufacturer direct.

Mr. Hunsberger insisted that personal work was absolutely essential in this propaganda, and outlined his ideas of the proper course to pursue in approaching physicians. In conclusion, he recounted a number of instances of how not to do it, and was particularly earnest in his warning against slovenliness and incompetence.

Mr. Franklin M. Apple read a paper on "Possibilities of Association Work," in the course of which he described the work that had been done under his leadership as chairman of the Ethical Preparations Committee of the N.A.R.D. He emphasized the fact that pharmacists must, individually, be prepared to assist the association work by being able and willing to demonstrate their ability to furnish the necessary preparations.

Among the retarding influences, he enumerated carelessness in making the official preparations, unpreparedness on the part of pharmacists, the publication of tactless literature and the demoralizing influence of the muck-rakers.

Mr. John K. Thum read the concluding paper, entitled, "Some of the Obstacles to be Overcome."

He characterized as the most serious of these obstacles the apathy and shortsightedness that appears to dominate the better equipped and generally better educated pharmacist; and, secondly, the well-developed streak of laziness that is such a common characteristic of the average retail druggist of to-day.

It is generally known that physicians are willing and even anxious to secure correct information on matters relating to pharmacy; but, unless pharmacists are in position to furnish accurate and satisfactory information, they will discredit, not alone themselves, but also the other members of their craft. To meet the legitimate requirements of physicians for information and assistance, pharmacists must be aroused and made to take a more active part in the professional side of their calling.

Dr. Wood, in answer to an inquiry, said that while it must be admitted that, theoretically, the manufacturer has certain advantages in the making of preparations that are, or are said to be, physiologically tested, practically this advantage was not so important. The claims that are made by manufacturers are not infrequently based on false premises or incomplete data, and in some cases at least have been proven to be incorrect. He believed that any apparent advantage that the manufacturer possessed at the present time could readily be overcome by intelligent and concerted action on the part of pharmacists.

Professor Remington advised pharmacists to adhere strictly to the official formulæ. There is danger of being penalized, in addition to discrediting the whole movement for popularizing official preparations.

Dr. F. E. Stewart pointed out that the pharmacist cannot shirk responsibility in the dispensing of prescriptions; he must satisfy himself of the genuineness and the efficiency of the substances he dispenses, regardless of whether he makes them himself or not.

Mr. Wilbert pointed out the need for post-graduate work for pharmacists, and incidentally referred to several incidents that had come to his attention recently that appeared to him to indicate that the average pharmacist is not so well informed on the properties of the substances that he is dispensing as he really should be.

Dr. John V. Shoemaker expressed himself as being pleased at having attended the meeting of the Philadelphia Branch, and while he was sorry to say that it was the first meeting that he had attended, he assured the members that it would not be the last. He was particularly gratified to note the intense interest and earnestness that had been manifested by the pharmacists present in the discussion of the problems involved in the advancement of the professional side of their calling, and assured his hearers that their efforts would certainly be rewarded.

He felt that physicians were largely to blame for present-day conditions, and he for one had received a new incentive to work in the efforts of having the present abuses corrected.

The subject was further discussed by Drs. Wood, Stewart and Lowe and by Messrs. Harbold, Stanislaus, Apple, Remington, Koch and Wilbert.

The consensus of the opinions expressed by the several members appears to be that, physicians being in a receptive frame of mind, it is clearly the duty of the pharmacist to fit himself for the important task of furnishing correct and up-to-date information on all matters relating to pharmacy, and to be prepared to furnish any or all of the official preparations, strictly according to standards, at comparatively short notice, on physicians' prescriptions.

M. I. WILBERT, *Secretary.*

EXHIBITION OF OFFICIAL PREPARATIONS

AT THE ANNUAL MEETING OF THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

The annual meeting of the Medical Society of the State of Pennsylvania, at Reading, Pa., September 23–26, 1907, is generally admitted to have been one of the most notable in its long era of usefulness.

While matters of economic interest were given considerable prominence, and were freely discussed, the scientific papers that were read and discussed were not alone much more numerous, but were generally listened to by larger and more appreciative audiences, clearly indicating that while the average physician is not unmindful of his own interests, he is primarily interested in matters of scientific, or professional, importance that he can utilize for the benefit of his patients and the community at large.

Altogether, upwards of 112 communications were presented, and by far the greater number of these were rather freely discussed by the members in attendance at the several meetings.

Among the more interesting innovations, and one that attracted the attention of a considerable number of the members in attendance at the annual meeting, was an exhibition of official preparations, under the auspices of the Pennsylvania Pharmaceutical Association.

As noted in a previous number of this JOURNAL, this exhibition had been authorized by the State Pharmaceutical Association at the recent annual meeting in Bedford Springs. A committee of eight members, with Mr. William L. Cliffe as chairman, had been appointed to arrange for the exhibition, and also to serve as delegates from the Pharmaceutical Association to attend the meetings of the State Medical Society.

In addition to the much appreciated and really creditable exhibition, the committee had also secured several hundred copies of the "Manual of the U.S.P. and N.F.," recently published by the American Medical Association. These booklets, with a correspondingly large number of pamphlets entitled, "The Propaganda for Reform in Proprietary Medicines," were freely distributed and were much appreciated by the visiting physicians.

Of the delegates appointed by the President of the Pennsylvania Pharmaceutical Association, Messrs. Cliffe, Hunsberger, Lemberger and Stein were in constant attendance to explain the advantages of using official or open formulary preparations in preference to secret proprietaries of variable or uncertain composition.

At the concluding General Session of the State Medical Society, Mr. William L. Cliffe, the chairman of the delegation from the Pennsylvania Pharmaceutical Association, was invited to address the society on the object of the Pharmaceutical Association in making this exhibition.

After presenting the greetings and felicitations of the State Pharmaceutical Association, Mr. Cliffe briefly outlined the object of the present propaganda for popularizing U.S.P. and N.F. preparations, and concluded by expressing the wish that members of the State Medical Association, who had seen the exhibition and had been interested in the preparations there presented, would continue their interest, and he further assured them that by lending a hand to aid in the advance of the science of pharmacy they would materially assist true progress in the science of medicine.

Many of the physicians in attendance at the meeting of the State Medical Association were loud in their praises of the enterprise shown by the pharmacists in making this exhibition, and the members of the delegation of the Pharmaceutical Association, who were present, were shown every courtesy possible, both by the officers of the State Society as well as the members of the local Committee of Arrangements.

PHILADELPHIA COLLEGE OF PHARMACY.

SEMI-ANNUAL MEETING.

The semi-annual meeting of the Philadelphia College of Pharmacy was held September 30, 1907. The meeting was called to order at 4 P.M. by the president, Howard B. French. The minutes of the meeting of the college, held June 24, 1907, were read and approved. The minutes of the Board of Trustees were read by the acting secretary of the Board, F. P. Stroup, and approved.

The report of the Committee on Nominations, proposing nominees for the Board of Trustees, was received and filed. William McIntyre requested that his name be dropped from the list of nominees, as it would be impossible for him to serve, and on motion, duly seconded, his request was complied with.

Professor Kraemer, in the absence of the chairman, Professor Remington, made a verbal report for the delegates to the meeting of the American Pharmaceutical Association held in New York City. He stated that the college was well represented, all of the Faculty being in attendance and many of the Board of Trustees and other members. Pharmaceutical education was largely discussed, as also the relations of the American Medical Association and the American Pharmaceutical Association, thus making clear to the medical fraternity the work of the pharmacists. There is also good reason to believe that some of the problems now confronting the two organizations will be solved in a satisfactory manner. Doctor Cohen, in his address, urged that recrimination be not indulged in, but that the members get together in a spirit of harmony, when, he predicted, many of the evils now complained of will disappear. The remarks of Doctor McCormack were along the same lines and had a good effect. The subject of degrees came in for a large share of the discussion, and it was thought that in the future the degree of Doctor in Pharmacy would be generally adopted. The papers and discussions of the several sections were to say the least, up to the usual standard of merit, and the meeting as a whole marked in a definite way another milestone in the progress of American pharmacy.

The President appointed the following as the Committee on Membership: C. B. Lowe, M. I. Wilbert, E. M. Boring, James T. Shinn (since deceased), and C. A. Weidemann.

The following-named gentlemen proposed for honorary membership at the meeting, held June 24th, were then balloted for and unanimously elected: Dr. Harvey W. Wiley, Chief of the Bureau of Chemistry, United States Department of Agriculture, Washington, D. C.; Richard T. Baker, Curator and Economic Botanist of the Technological Museum, New South Wales; Henry G. Smith, Assistant Curator and Chemist of the Technological Museum, New South Wales; Professor Nagayoshi Nagai, Professor of Pharmacy of the College of Medicine of the Imperial University of Tokyo, and President of the Pharmaceutical Society of Japan; Dr. H. Thoms, Professor of Pharmacy and Director of the Pharmaceutical Institute of the University of Berlin; Dr. Nathaniel Lord Britton, Director of the New York Botanic Gardens, New York City.

The tellers appointed to conduct the election of three trustees for the ensuing three years reported the re-election of Richard M. Shoemaker, Edwin M. Boring and Charles Leedom.

Professor Kraemer presented a photographic reproduction of an oil painting of the late Professor John M. Maisch, made when he was twenty-five years of age; also a photograph of President French, for which the thanks of the college were tendered him.

Professor Sadtler reported that the number of matriculants for the coming session materially exceeded that of classes for several years past, and that quite a number had matriculated for the Food and Drug course.

Professor Lowe informed the meeting that Dr. Singer, the Assistant Superintendent of Public Education, told him that he had never had a better class of certificates presented to him.

ABSTRACT FROM MINUTES OF THE BOARD OF TRUSTEES.

June 4, 1907.—The Joint Committee of Finance and Property reported that they had given careful consideration to the plans for the new Pure Food and Drug Laboratory, and submitted same to the Board for their action. They further recommended that a committee be appointed, authorized on behalf of the college to solicit subscriptions for such sums as can be obtained for the erection of the building.

A communication was received from the dean regretting his inability to be present, as he had arranged to deliver an address at the meeting of the American Medical Association.

A communication was received from Joseph L. Lemberger regretting that an important engagement prevented his attendance, but he wished to encourage the project for the new Pure Food and Drug Laboratory.

The revision of the plans for the new building was referred to the Committee on Property, with power to act.

The Committee on Library reported a number of accessions during the month, some by gift and others by purchase.

The Committee on Accounts and Audit reported having examined the accounts of the treasurer, registrar and the AMERICAN JOURNAL OF PHARMACY, and found them correct.

The Committee on Instruction presented a lengthy report covering the work of the past college year, and submitting a number of recommendations for the action of the Board. The recommendations were considered seriatim and adopted.

The Committee on Commencement reported that May 21, 1908, would be the date for holding the next commencement.

An amendment of Article VIII, Section I, of the By-Laws, proposed at the meeting in April, was adopted.

The registrar was authorized to express the thanks of the Board to the press of the city for the publicity given the recent commencement exercises.

Charles J. Heinle was elected to active membership.

C. A. WEIDEMANN, M.D.,
Recording Secretary.

OCTOBER PHARMACEUTICAL MEETING.

The first of the series of pharmaceutical meetings of the Philadelphia College of Pharmacy for 1907–08 was held on Tuesday afternoon, October 15th, with Dr. R. V. Mattison, vice-president of the college, in the chair.

The meeting was devoted to a symposium on the cultivation of medicinal plants. Prof. Henry Kraemer was the first speaker on the programme, and in his opening remarks said that this being the harvest season, it was deemed an opportune time to call attention to the practical results obtained by several graduates of the college in the growing of medicinal plants. He then gave the results of his own experiments in the growing of over 100 native medicinal plants, a large proportion of which are shaded woodland plants and require the protection of shrubs and trees. The experiments showed that this condition is of more importance than even that of soil, the plants being not only protected from the sun, but also from beating rains and winds. Of the plants requiring protection of this kind, hydrastis was especially mentioned.

Professor Kraemer said that not only are many drug-yielding plants growing scarce, but in a number of instances the drugs have fallen into disrepute by reason of their scarcity and the consequent spurious character of the drugs supplied. As examples of such drugs, aspidium and spigelia were mentioned. He then spoke of the diversified habits of medicinal plants and pointed out the necessity for experience in their cultivation. In this connection he exhibited petri dishes containing prothallia of *Aspidium marginale*, which had been developed from the spores under nearly sterile conditions, and said that he was making a study of the plant with a view to its cultivation. He called attention to the fact that the rhizome of a comparatively young plant will yield as much of the active drug as an older plant, as the rhizome gradually dies at the posterior end, losing its green color.

Professor Kraemer stated that there are some medicinal plants which, on account of their destructive influence on other plants, it is not desirable to cultivate except under special control conditions, as corn smut and ergot, and said that he had successfully grown corn smut the year round in the laboratory. He thought that possibly ergot might be grown by means of nutrient media prepared from cereals, such as wheat and rye.

Prof. C. B. Lowe recalled an instance in which some imported aspidium, purchased by the late Professor Maisch, was without green color, due probably to the fact that the rhizomes had been sliced previous to drying, and the quality thus affected through exposure. He then spoke of the beneficial influence of the forest reserves in preserving the native plants within their boundaries.

Dr. John A. Borneman, of Philadelphia, presented some data on "The Naturalization of Foreign Medicinal Plants." He said that for a number of years past he had been associated with Mr. Lewis Hellerman, of Lawndale, Pa., in the growing of medicinal plants, particularly foreign plants, and that they had been remarkably successful. Among other foreign plants, they have cultivated the following, all of which, it was stated, can be grown on a large scale and with little cost, except aconite: *Atropa Belladonna*, *Digitalis purpurea*, *Hyoscyamus niger*, *Pulsatilla* (*Anemone*) *pratensis*, *Conium maculatum*, *Aconitum Napellus* and *Bryonia alba*. Some of the difficulties met in the cultivation of these plants were mentioned by Dr. Borneman. Efforts to grow aconite plants, both from imported seeds and seedlings, met with failure. Belladonna, while usually doing well, is sometimes attacked by a worm which bores through the root, causing the plant to wither and die. In the growing of belladonna it was found an advantage to take up the roots in the fall, bury them, and set them out in the spring, rather than to propagate the plants from seeds. The roots produced by bryonia plants were small as compared to the commercial drug. In one instance the first year's growth of hyoscyamus was good, but the crop was destroyed by insects the second year. Digitalis does not well survive the winter. Tests showed that digitalis leaves, contrary to statements sometimes made, are more potent in the fall, after flowering, as are also small leaves grown in the shade.

Dr. Borneman said that they had also taken up the cultivation of a number of medicinal plants indigenous to the Southern States. Of those which can be grown successfully in Pennsylvania, he mentioned the following: *Passiflora incarnata*, *Echinacea angustifolia*, and *Nicotiana Tabacum*.

In concluding his remarks, the speaker stated that they now have fifty or eighty species of plants under cultivation, and that next year they would probably add fifty more.

Mr. M. I. Wilbert said that it was interesting to note that a century ago the Friends' herb gardens, one of which was on Walnut Street, flourished in Philadelphia, and that one of the founders of the college was interested in the sale of the drugs derived therefrom, and then mentioned the fact that Benjamin Franklin had sent from England a specimen of *Rheum rhaponticum* to John Bartram, who cultivated the plant for a number of years.

Dr. Mattison conjectured that the influence of the Pure Food and Drug Law would tend to promote the cultivation of medicinal plants.

Prof. Joseph P. Remington said that the claim had been made that some cultivated plants are not as rich in active principles as those in the wild state. He then spoke of the fugitive qualities of digitalis leaves, and said that no satisfactory method having been devised for their assay, a tincture of fresh leaves could be introduced into the Pharmacopœia if physiological tests showed it to be the more active.

In reply, Dr. Borneman said that his experience showed that belladonna and digitalis leaves, from cultivated plants, are above the standard. Then, referring to the subject of the relative value of fresh and dry drugs, he said that pulsatilla is much more active when fresh, and that bryonia, while inert when dry, is useful in a number of diseases when fresh.

John R. Rippetoe, P.D., of New York City, sent a communication entitled " Some Assays of Drugs Collected from Cultivated Plants," which was read on his behalf by Edwin M. Boring. (See page 523.)

Edwin L. Newcomb, P.D., assistant in the department of botany and pharmacognosy, gave the results of experiments in the farming of medicinal plants, which had been conducted under his supervision the past summer by a number of persons who were interested in agricultural pursuits and experimental farming, in the vicinity of Vineland, N. J. The plants were nearly all grown from seeds, and under conditions which would obtain on a commercial scale. The following is a list of the plants which were grown : *Capsicum* species, *Papaver somniferum*, *Coriandrum sativum*, *Atropa Belladonna*, *Salvia officinalis*, *Lobelia inflata*, *Digitalis purpurea*, *Nepeta Cataria* and *Panax quinquefolium*.

A large number of specimens of the drugs, and the plants from which they were derived, were exhibited. In addition, Professor Kraemer called attention to an original package of new season's Allen's English digitalis leaves, a sample from a supply imported by Messrs. Lehn & Fink, of New York City. It is stated that the leaves are collected and selected with special care, and dried at a low temperature, so as not to impair the active glucosides. The drug was packed in a glass bottle, and the package accompanied by a potency certificate. Dr. Mattison presented a handsome specimen of asbestos from the Canadian mines, which, he said, are the largest in the world.

During the course of his remarks, Professor Kraemer announced that he had seeds of belladonna and *Veratrum viride*, which he would be glad to furnish in small samples as long as his supply lasted.

M. I. Wilbert, Ph.M., demonstrated the preparation of, and gave formulas for, "Emulsion of Castor Oil" and "Nascent Ferrous Carbonate." (See pages 524 and 525). FLORENCE YAPLE,

Secretary pro tem.

THE AMERICAN
JOURNAL OF PHARMACY

DECEMBER, 1907

BENZOIC *VS.* CINNAMIC ACID IN FOOD ANALYSIS.

BY WILBUR L. SCOVILLE.

An indictment was recently served in Massachusetts against a prominent firm for selling sweet pickles which were said to be preserved with benzoic acid. Both the Government chemist and the chemist to whom the sealed samples were taken, said that benzoic acid was present. The manufacturer denied this strenuously, and asked for an investigation by the writer, which investigation brought out the following facts:

The pickles were highly flavored, oils of cinnamon and clove being the chief flavoring agents. Oil of cinnamon (cassia) is composed chiefly of cinnamic aldehyde, which oxidizes on exposure to cinnamic acid. Old oils of cinnamon may be found containing abundant crystals of this acid.

Cinnamic acid resembles benzoic acid closely, both in physical and chemical properties. So close is the resemblance that in the early part of the nineteenth century the two acids were confounded, and until Bizio, in 1826, showed that cinnamic acid is a distinct substance, it was identified with benzoic acid.

The resemblance between the two acids appears to have been overlooked in the above case.

For the detection and identification of benzoic acid two tests have been adopted by Government chemists. These are (1) the ferric chloride test, which gives a flesh-colored precipitate with neutral benzoates, and (2) the metadinitrobenzoic acid test, which consists in heating the dry substance (after separation from other material) with strong sulphuric acid and a little potassium nitrate, neutralizing the fluid with ammonia water, and adding a drop or two of ammonium sulphide solution, when a red color appears if benzoic acid was present.

Neither of these tests will distinguish between benzoic and cinnamic acids. In fact, cinnamic acid responds to both tests almost as well as benzoic.

With ferric chloride, in moderately strong and colorless solutions, cinnamic acid gives a precipitate that is decidedly yellowish, and is distinguishable from benzoic. But in weak solutions, when the precipitate is slight, yet marked, the precipitates cannot be distinguished by color, and when the test is applied to a deeply colored solution, as is obtained from sweet pickles, it is obvious that a test depending upon a tint cannot be trusted.

Some oil of cinnamon (both cassia and Ceylon cinnaman oils were used in separate tests) was shaken with warm water and the liquid filtered. A drop of ferric chloride added to a test-tube full of the filtrate produced a precipitate that could not be told, by color or physical appearance, from that produced in a weak solution of sodium benzoate by ferric chloride. Yet the conditions of the test were most favorable for comparing results. Some cinnamon water was distilled with steam, the distillate neutralized with ammonia, evaporated to a small volume, rendered acid, shaken out with ether, the ethereal solution shaken with water, then with weak ammonia solution, and the excess of ammonia driven off by evaporation on a water bath. This solution gave a precipitate with ferric chloride that might fairly be taken for benzoic acid; and this process was the one used by the Government chemist, and upon which the indictment was based.

Some cinnamic acid was prepared by oxidizing oil of cassia with hydrogen peroxide, and the purified acid (having a melting point of 133° C.), reacted to both the iron and the ammonium sulphide tests in a way similar to benzoic acid.

It is obvious that these tests cannot be relied upon to detect benzoic acid in a product that is flavored with cinnamon.

The best test found for distinguishing between the two acids is the manganous test. Manganous salts give a white precipitate with cinnamates, which gradually becomes crystalline. No precipitate is found with benzoates, even in moderately strong solutions.

The precipitate forms slowly with cinnamates, but is quite delicate

The solution should be allowed to stand an hour, at least, with moderately weak solutions.

Oil of cinnamon is a frequent condiment in food products, and the above shows clearly that when these are examined for benzoic acid, the cinnamon is likely to mislead. If a crystalline body is obtained in the process of separating, the usual tests cannot be relied upon to distinguish between the two acids. It is difficult to get the acid in a pure enough condition to identify it by the melting-point, and the sublimation test is also unreliable.

If a precipitate is obtained with ferric chloride in neutral solution, the liquid should also be tested with solutions of manganous sulphate (or chloride). A precipitate with this, after an hour's standing, shows cinnamic acid. If no precipitate occurs benzoic acid is indicated.

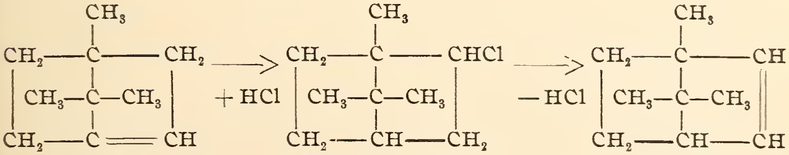
SYNTHETIC CAMPHOR.

By Frank Tutin.

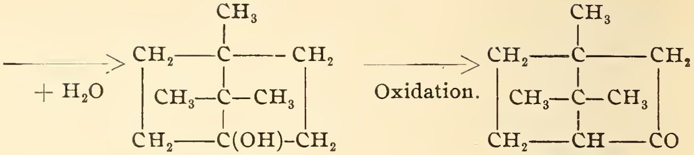
In the August number of this Journal, pp. 349–356, there appeared a contribution from Mr. L. F. Kebler (Chief of the Drug Laboratory, Washington, D. C.), entitled "Synthetic Camphor," which was intended by the author to be a response to the requests received by the Bureau of Chemistry for information on this subject.

In the above-mentioned communication an account was given of the various processes which have been devised for the synthetic production of camphor, and the chemical changes involved therein were illustrated by means of structural formulæ. In view of the purpose which the paper was intended to serve, it appears somewhat unfortunate that it should contain a number of inaccuracies, and as these are so fundamental in their nature, it would seem desirable that attention should be drawn to them.

The author, for example, has represented the changes involved in the conversion of pinene into camphor by means of the following formulæ:

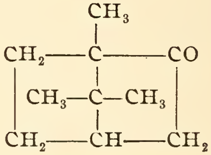


Pinene. Bornyl chloride. Camphene.

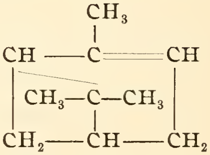


Isoborneol. Camphor.

The first criticism that may be made regarding the above formulæ is that the one assigned to camphor is incorrect. It has been shown, namely, by Bredt (*Ber. d. deutsch. chem. Ges.*, 1893, **26**, 3047) and subsequent workers, that this ketone is represented as follows:



In the second place, the formula given for isoborneol is obviously impossible, for this substance is represented as a tertiary alcohol, and could not, therefore, afford camphor on oxidation. The correct structural formula for isoborneol, and also for borneol, since the latter only differs from the former stereochemically, is obtained by substituting for the oxygen atom in Bredt's camphor formula the elements HOH. Camphene and bornyl chloride are correctly represented, but the structure assigned to pinene is not that which is at present accepted. The formula by which Mr. Kebler represents this terpene is that which was suggested by Bredt in 1893 (*loc. cit.*), but the more recent work of Wagner (*Ber. d. deutsch. chem. Ges.*, 1894, **27**, 1636) and of Baeyer (*Ibid.*, 1896, **29**, 3, 326, 1907, 1923, and 2775) indicates that pinene possesses the following structure:



This formula is now generally accepted as the correct representation of the constitution of pinene. It consequently follows that the conversion of this terpene into bornyl chloride is not brought about by the simple addition of hydrogen chloride, but involves the change of the dimethyltetramethylene into a trimethylpentamethylene ring.

A further striking inaccuracy occurs on page 353 of Kebler's paper. He there represents the formation of camphor from "turpentine" by means of oxalic acid, but in this case pinene and camphor are represented by formulæ which are not only totally different from those assigned to these substances in the preceding portion of his paper, but are, moreover, quite incorrect.

It may incidentally be noted that the same error regarding the structure of pinene as that first referred to above occurred in a paper entitled "Syntheses of Camphor," recently communicated to the New York section of the Society of Chemical Industry. (*J. S. C. I.*, 1907, Vol. XXVI, 8, 384.)

THE WELLCOME CHEMICAL RESEARCH LABORATORIES,
LONDON, E. C.

COMMENTS ON SOME OFFICIAL STANDARDS AND TESTS.[1]

BY L. HENRY BERNEGAU.

In commenting upon some official standards and tests it has been thought best to bring before the meeting this evening a few selected observations somewhat out of the usual run, rather than to consider the more familiar tests, such, for instance, as are included in the "purity rubric" requirements, which must now be well known to all of us whose daily duties demand a constant use of the United States Pharmacopœia. I shall, therefore, confine my comments to less than half a dozen topics, hoping that the experiences of others present may be brought out in the discussion, for it is only by working together and exchanging our views that real good may come from these meetings, and the scientific status of the professsion of pharmacy be raised.

Gum Benzoin.—The U.S.P. requires that benzoin be soluble in 5 parts of warm alcohol, show an acid reaction to litmus paper, be soluble in KOH and NaOH solutions, on incineration leave not more than 2 per cent. ash and yield benzoic acid on sublimation.

There are four kinds of benzoin on the market—Siam, Sumatra, Penang and Palemga varieties. The first two are the ones with which we mostly have to deal. Siam benzoin should be nearly free from cinnamic acid; Sumatra sometimes contains a considerable amount of it. Siam benzoin contains about 0·15 per cent. vanillin; Sumatra benzoin contains on the average about 1 per cent. Although the percentage of vanillin in the Sumatra varieties is therefore six to seven times higher than in the Siam variety, the latter has a more pronounced vanilla-like odor. We received lately a refined gum benzoin of an extraordinarily strong vanilla-like odor, and suspecting a cheap resin flavored with vanillin we took special care in testing the same. The sample was of a dark-reddish brown color, brittle and translucent, almost perfectly soluble in 5 parts of warm alcohol and also soluble in KOH solution. It was nearly free from cinnamic acid—there as cinnamic-phenyl-propyl ether and cinnamic-benzyl-ether (test made with potassium permanganate)—and left only 0·58 per cent. ash on incineration. An assay for benzoic acid, made by sublimation, gave 11·74 per cent., the average of the latter being about 10 per cent. in a good quality benzoin (bisulphite method being used). Although the vanillin odor, as said before, was extremely strong, we evidently had not an adulteration but a high-grade quality before us, probably refined Siam benzoin with a small percentage of Sumatra benzoin.

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[1] Read before the Philadelphia Branch of the American Pharmaceutical Association, November, 1907.

ESSENTIAL OILS.

In many cases the different oils stood the U.S.P. tests for specific gravity, solubility, general appearance, odor, etc., but did not answer U.S.P. requirements in regard to optical rotation. For example:

Oil of Coriander had a specific gravity of 0·87 at 25° C., solubility, etc., was O. K., but the optical rotation at 25° C. was — 15·4, instead of + 7° to + 14°

Oil of Thyme was O. K. in regard to specific gravity, solubility, etc., and was free from official phenol. The oil assayed 23 per cent. phenols, 3 per cent. more than the U.S.P. requires. The optical rotation, however, was + 9·5, the U.S.P. requiring the oil to be slightly laevogyrate.

In testing *Oil of Orange*, *Oil of Anise*, and others, we found the same conditions.

Oil of Eucalyptus we found to have the required optical rotation, but the percentage of cineol was in most cases too low, some oils assaying only 10–15 per cent. instead of 50 per cent.

Oil of Sandalwood we found U.S.P. with a high percentage of santalol and in all (15) except two samples, the optical rotation was between — 16° to — 20°, according to U.S.P. The two other samples read — 10.5° and — 11·2°, respectively. Both assayed about 91 per cent. santalol.

We are making at present tests of this important drug by fractional distillation and shall be glad to make our results public later.

Under *Oil of Anise* the U.S.P. says: "The oil should be laevogyrate, the angle of rotation being — 2° in a 100-mm. tube at 25° C. (absence of oil of fennel)." Looking up oil of fennel in the U.S.P. you will find not a word on the optical rotation of the oil—not even mentioned whether it should be dextro- or laevogyrate. The question is, "Would the angle of rotation be increased or decreased by the presence of oil of fennel"? What is the reason for omitting the angle of rotation in one case and giving it in another?

Nitroglycerin.—In assaying nitroglycerin in solutions as well as in tablets we use Lunge's Nitrometer with the best results in determining the exact amount of absolute glyceryl trinitrate. It takes a little experience to work the nitrometer quickly, but once acquainted with it, it is easy to make five or more different determinations in one hour. We assayed recently quite a number of samples of spirits of glonoin, sold to contain 10 per cent., and found on the average only 8·5 per cent. absolute nitroglycerin by weight. As these spirits enter all preparations containing nitroglycerin, it is necessary to determine their absolute strength before using them. Tablets made with glonoin lose 30 to 40 per cent. in strength during manufacturing, and it is necessary to allow a large excess to bring the finished tablets to a required strength. The tablets seem to lose during the granulation process, probably by evaporation, as granulations ready for the tablet machines, and the finished tablets themselves, were found to contain the same amount of nitroglycerin. The age does not seem to have much effect on the tablets because a number of lots assayed nine months ago show the same respective amounts of nitroglycerin now.

Potassium Arsenite.—In assaying potassium arsenite powder for arsenous acid care should be taken to use the right formula. The appendix of the U.S.P., under "List of the elements and principal pharmacopœial chemicals," gives the formula for potassium arsenite as $KAsO_2$. This formula is correct, if we make a solution of the salt by gently heating As_2O_3 with an excess of potassium bicarbonate in the presence of water, as in the case of the official Liq. Pot. Arsenitis, but it is not correct for the dry salt, which has the formula $KAsO_2 + HAsO_2 + H_2O$. (E. Schmidt, Merck's Index, etc.) Taken as $KAsO_2$ the salt would contain about 68·4 per cent. As_2O_3, but taken as $KAsO_2 + HAsO_2 + H_2O$, it contains about 72·7 per cent. As_2O_3.

The dry salt is difficult to manufacture and contains always a more or less large amount of potassium carbonate—one of our samples running as high as 35 per cent. K_2CO_3 and only 38 per cent. of As_2O_3. As_2O_3 was determined by the common Iodine method, the K_2CO_3 by calculation from CO_2 found with Scheibler's apparatus (for determination of CO_2 in boneblack).

ANALYTICAL LABORATORY OF THE H. K. MULFORD COMPANY,
November 5, 1907.

THE OPSONIC THEORY AND BACTERIAL VACCINES.

BY A. PARKER HITCHENS, M.D., Glenolden, Pa.

For the more lucid understanding of a theory which occupies only a small part of an important branch of medical science, some knowledge of the fundamental principles of the general subject is essential. This is the relation which the opsonic theory bears to that most interesting and apparently inexhaustible subject—immunity; and I therefore request your indulgence while I consider it briefly.

Immunity may be roughly defined as resistance to disease. This immunity or resistance may be natural, congenital or acquired; man is *naturally* immune to certain diseases which attack the lower animals (black leg, hog-cholera). A child may be born with a degree of inherited immunity to a certain disease—*congenital;* immunity to a disease is *acquired* by recovery from an attack of the disease or by artificial inoculation. Immunity is relative or absolute. Immunity is *active*, when the body of the individual elaborates its own protective, or curative substances; it is *passive* when the protective or curative substances are manufactured in the body of another animal and transferred artificially (antitoxin).

The study of immunity, the foundation of which was laid by Pasteur and Koch, modest in its beginnings, has grown to be, in my opinion, the most important of all sciences. The application of principles evolved from investigations in immunity has resulted in the lengthening of the average life of man by several years, and we have not yet begun to fathom its possibilities.

Since the time of Pasteur many theories have been evolved to explain the mechanism of our resistance to communicable disease.

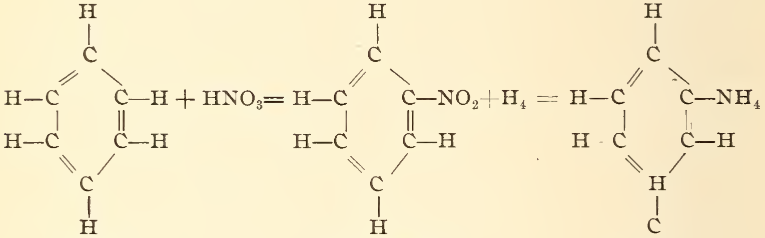
Attempts have been made to satisfy our curiosity as to why one has scarlet fever, as a rule, but once; why a single attack of typhoid fever endows one with the power of drinking Schuylkill water with impunity; why a successful vaccination protects against smallpox. One of the early hypotheses is that known as the "Exhaustion Theory." Of this the following illustration has been given: a man coming from market with a number of different kinds of fruit in his basket is attacked by several boys. One boy who is fond of no fruit but apples eats all the apples, another who cares only for peaches eats all the peaches, the third who has a taste for bananas alone exhausts the supply of this fruit, and so on. In other words during an attack of typhoid fever, for example, some substance in the normal body is "eaten up" by the typhoid bacillus, and the individual is henceforth immune to this disease. After much discussion and experimentation this theory of Pasteur's was found to be untenable.

Next the "Retention Theory" attracted much notice. This is just the opposite of the exhaustion theory, in that, instead of taking something away from the body, certain materials were supposed to be added by the growth of infective bacteria in the tissues.

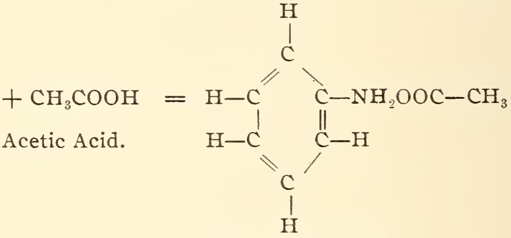
The two theories that have occupied the field for the last few years are the side-chain theory of Ehrlich and the phagocytic theory of Metchnikoff. According to the latter, bacterial diseases are resisted by the leucocytes—the white blood corpuscles. When one of these meets a bacterium, it encloses and ingests it and may kill it. If the germ is very strong or virulent the leucocyte may not be able to kill it, but may itself be killed. When the leucocytes are unable to destroy invading organisms an infection results. The process of the ingestion of bacteria by the leucocytes is called phagocytosis, and the white-blood corpuscles performing this function are called phagocytes.

The side-chain theory of Ehrlich is not so easy of explanation, it is essentially a chemical one. He believes that the mechanism of immunity is allied to the phenomena of nutrition of the body cells.

For its nutrition each body cell is believed to be endowed with radicals possessing side chains or bonds of affinity; of this the benzol ring is the classic illustration. The formula for benzol is C_6H_6. Written out graphically we find each atom with its bonds of affinity perfectly satisfied. With certain chemicals, however, one of these hydrogen atoms may be split off and other elements linked to the radical. The changes which take place in the building up of acetanilid amply illustrate the variety of substances physically different which may exist without the slightest change in the benzol ring.



Benzol. Nitro-Benzol. Anilin.



Amido-aceto-benzol.

The number of different molecular groups which may link themselves to this side chain reaches almost to infinity.

The analogy between this view and that of Ehrlich concerning cellular nutrition and the production of acquired immunity is very close. The cell is believed to select its nourishment by means of side chains, but instead of being chemical they are protoplasmic side chains. These protoplasmic side chains are called receptors. Now, cells have receptors not only for substances which are beneficial to them but also for substances which tend to destroy them. It is through these receptors that bacteria by means of their toxins and other metabolic products attack the cell. When a cell has been thus set upon and injured, the reparative powers of the body exercise their function and one evidence of repair is the production of more receptors. As nature is prodigal in all her reparative processes an excess of receptors is manufactured and some are crowded out into blood and tissue juices. A large number of these receptors floating in the serum constitutes the antitoxins and antibacterial serums.

There are as many different kinds of receptors as there are substances which attack the cells. The haptophore group (as it is called), of the toxin or poison must exactly fit the receptor or there is no toxic effect produced. The mongoose is not affected by a snake bite, in other words, the cells of the mongoose have no receptors which fit the haptophore group of snake venom.

This brings us to the place which the opsonic theory of Wright occupies in the study of immunity. For a number of years the French school, with Metchnikoff at its head, has been maintaining that the formed elements of the body are responsible for resistance to disease, while Ehrlich and the German school contends that the body fluids are of most importance in this connection. Wright has shown that both these elements are almost equally important—the leucocytes ingest and destroy infecting bacteria but are able to do this only after the latter have been acted upon by some substance in the serum of the blood. The substances in the blood and tissue juices which prepare bacteria for phagocytosis have been called opsonins—from a Greek word meaning to prepare for food. Immunity according to this theory depends upon phagocytosis, and phagocytosis depends upon the opsonins. Obviously then the degree of immunity depends upon the opsonic content of the blood. The ingenious technique devised by Wright and his co-workers has facilitated the estimation of these substances.

Definition.—The opsonic index expresses the power of the blood serum of the individual under examination to prepare bacteria for phagocytosis compared with the same power of the blood serum of a healthy individual under exactly the same conditions.

Technique.—To determine the opsonic index three things are necessary:

(1) A suspension of bacteria.

(2) A suspension of healthy leucocytes.

(3) Blood serum.

The last is the only variant.

Equal parts of these are drawn into a capillary pipette; after thorough mixing, the pipette is sealed and the mixture is kept at the body temperature for about fifteen minutes. During this time the opsonins which are contained in the blood serum act upon the bacteria—opsonize them. Those bacteria which have been prepared are then ingested by the leucocytes. After incubation the contents of the pipette are again thoroughly mixed and spread upon slides. The slides are properly stained and examined under the microscope. One hundred leucocytes are counted and the number of bacteria they have ingested is recorded. Two different mixtures are made, one using the blood serum of the patient, the other the blood serum from at least one healthy individual. The opsonic index of the healthy person being taken as 1, the proportion between the number of bacteria ingested in the two cases gives us the opsonic index of the patient. For example: with healthy serum one hundred leucocytes ingest 400 bacteria, with the patient's serum the same number of leucocytes ingest only 300 bacteria, then 400: 300: 1 : X. The opsonic index of the patient is 0 75.

If the patient's serum prepared 500 bacteria, his index would be (400: 500: 1: X)—1·25.

One of the important practical features of a knowledge of the opsonic index is its value as an aid in diagnosis.

When a person is infected with a certain organism, the tubercle bacillus, the staphylococcus or whatever it may be, his opsonic index to that particular organism is likely to be below normal, it may be above, or the equilibrium may not be disturbed.

If a patient is suffering with some obscure disease of the throat, for instance, and it is impossible for the laryngologist to decide between cancer or tuberculosis, a tuberculo-opsonic index of, say, 0·75 is almost conclusive evidence of tuberculosis. The diagnostic value of this procedure in obscure surgical diseases cannot be overestimated.

But the most important field the opsonic index has occupied is in control of dosage for vaccine therapy. When the opsonic index is persistently low to a certain organism it shows us that the resistance of the patient is low to infection by this organism, and unless his resistance can be raised in some way we can expect no improvement.

Wright has shown that the opsonic index can be raised if we inject beneath the healthy skin a certain number of killed bacteria of the same variety as those which are infecting the patient. The number of killed bacteria to be injected and the intervals between doses have been carefully studied by Wright and his co-workers. When the proper dose of killed bacteria has been injected there is first a fall in the opsonic index; this is followed by a rise above the normal. The fall in the index is probably due to the neutralization of the opsonins which are in the blood by the injected bacteria—this is called the negative phase. The subsequent rise is called the positive phase, and it is during this period that improvement in the patient's condition is looked for. It is not necessary to give a second dose of killed bacteria so long as the index remains above normal.

These suspensions of killed bacteria are called bacterial vaccines. There has been some discussion as to the use of this word which heretofore has meant, to the popular mind, at least, that material used for the purpose of conferring immunity to smallpox. According to the etymology of the word it is truly a misnomer employed in this general sense, but custom has sanctioned its use.

A vaccine is any material intended for administration with the idea of stimulating the production of active immunity to a certain disease. We vaccinate man to protect him against smallpox, cholera, bubonic plague, typhoid fever; we vaccinate animals to protect them against anthrax, black-leg, erysipelas, rinderpest. Even plants may be vaccinated.

The difference between an antitoxin and a vaccine is that an antitoxin confers passive immunity, while a vaccine stimulates active immunity. The vaccines used to raise the opsonic index and thereby bring about improvement in localized infections are merely bacteria suspended in normal saline solution.

For the preparation of these vaccines, cultures are made upon the surface of a solid culture medium, usually agar-agar. These are kept at the body temperature for about twenty-four hours and the resulting growth washed off with sterile salt solution. The thick suspension is collected in a proper vessel and the bacteria are killed at 60° C. This temperature is just sufficient to destroy the life of the germs with little injury to their specific immunizing properties. The bacterial suspension is now shaken for an hour or more to break up all clumps (some organisms require special treatment to secure this end), in order that a homogeneous suspension may be obtained. To accurately measure the dose of these vaccines it is necessary to count the number of bacteria per cubic centimeter. This is done by one of Wright's most ingenious methods. Equal volumes of blood and bacteria are measured by means of a capillary pipette and thoroughly mixed, after which a drop of the mixture is spread upon a slide in a thin layer by drawing the edge of another slide over it. The thin film thus prepared is fixed and stained. Under the microscope the red blood corpuscles and bacteria contained in a number of fields from various parts of the slide are separately enumerated. Knowing the number of red corpuscles in one cubic centimeter of the blood used, the proportion between the corpuscles and bacteria being ascertained by this enumeration, it becomes a simple mathematical problem to calculate the number of bacteria per cubic centimeter. For example, in twenty-five fields we find 800 red corpuscles and 1600 bacteria; by one of several well-known methods we have determined that there are 5,000,000 red corpuscles per cubic millimeter or 5,000,000,000 per cubic centimeter—then 800: 1600 : : 5,000,000,000 : 10,000,000,000.

The next step is to dilute the thick suspension sufficiently to make each cubic centimeter contain a convenient number of bacteria. A small percentage of liquor cresolis comp. (N.F.) is generally added to prevent contamination.

Experience in St. Mary's Hospital appears to favor extremely small doses. Those published a year or more ago are much larger than the numbers given me by Professor Wright during the past summer. These are as follows:

Staphylococcus	50,000,000	to	250,000,000
Streptococcus	1,000,000	"	5,000,000
Gonococcus	500,000	"	2,000,000
Pneumococcus	10,000,000	"	20,000,000
Colon bacillus	5,000,000	"	20.000,000
B. pyocyaneus	5,000,000	"	20,000,000
Micrococcus neoformans	5,000,000	"	100,000,000
Micrococcus catarrhalis	according to turbidity.		

The tuberculins are used for the same purpose as bacterial vaccines and in practically the same way. A description of the method of their preparation which is quite different from that of the bacterial vaccines would increase the length of this paper unduly.

As is well known all biological products deteriorate in the course of time. Smallpox vaccine kept at the temperature of the body is valueless after a very few days. According to Elgin it may be kept for years at a temperature of about—5° C. without the least impairment of strength. Our own experiments have shown us that diphtheria antitoxin, under the ordinary conditions of the market, loses about 2 per cent. of its potency per month. When kept at a little above the freezing point the deterioration is practically nil. We have no way of gauging the activity of bacterial vaccines and no method of accurately determining the loss in strength on keeping, but we do know that there is some loss, and we know that temperature and light are the most active influences in this direction. The lesson to be learned from this is that all biological products should be kept as near the freezing point as possible, and the pharmacist who displays packages of antitoxin and vaccines in his shop window, or keeps them in a show case, is what our President might call an undesirable citizen, not so much from the standpoint of the manufacturer, as of the patient who must suffer the result of not receiving the full benefit of a product which had been kept under proper conditions. An efficient refrigerator is absolutely necessary in every drug store which handles biological products. This necessity will increase with the increase of our knowledge of immunity. For specific infections drugs will be used less and less and the use of specific curative and immunizing materials will increase in proportion.

THE OPSONIC THEORY IN RELATION TO TUBERCULOSIS.

By E. Burvill-Holmes,
Bacteriologist, Phipps Institute, Philadelphia.

When I accepted the invitation to appear before you, I was under the impression it was but to discuss the paper of Dr. Hitchens, to which you have just listened. When, three or four days later, I received a printed card announcing that I should read a paper on "The Opsonic Theory in Relation to Tuberculosis," I can assure you it came as a surprise. As a matter of fact, had I been apprised of this in the first place, I should have indubitably declined the honor, and for the one good reason that I should have felt, as I do feel, very presumptuous in undertaking a task to which I fully appreciate I can do but feeble justice. My personal experience on opsonins in connection with tuberculosis is comparatively limited, more of my work having been done with the organisms responsible for the mixed infections. However, since I shouldered the responsibility of this paper, and you will forbear with me a short time, I will attempt in as brief a manner as possible and as lucidly as my literary abilities will permit, to give you an insight at least into the subject.

Inasmuch as Dr. Hitchens has explained so fully what is meant by "Opsonin" I will not reiterate it. Neither will I tax your minds with the various theories of immunity, of which there are a great number—some simple, others intricate. Any of you who are thirsting after such knowledge and are desirous to wrestle with these problems I can only refer to the many works on the subject of past and recent times. I would not touch upon the technique of estimating the opsonic index in tuberculous patients were it not for the fact that in working with the *Bacillus tuberculosis*, methods are somewhat different than are those when other bacteria are employed. To be sure the preparation of the blood cream is the same in both instances; the contents and proportion of each in the opsonizing tubes do not differ, to the exclusion of the organism used; the process of mixing is the same, as is also the making of the smears. On the other hand, the preparation of the emulsion is a more difficult and tedious task than is the case with the other bacteria if a suitable one is to be obtained; special staining is required and the time of incubation is more prolonged. Let me digress one moment and say a few words here as to the mixing. The method adopted by Wright has been explained to you by Dr. Hitchens. It seems to me that the method while insuring thorough incorporation is, except in very skilled hands, performed at the risk of introducing many air bubbles to the tube, thus interfering with proper phagocytosis. I have observed some laboratory workers indeed, who, in order to avoid this exasperating complication, have abstained from completely emptying the tube at each compression of the rubber nipple, which would of necessity be fruitful of errors. To overcome this I have devised a tube which I have found extremely satisfactory. It is easy to manipulate; thorough mixture is secured, and it obviates, or at least reduces to a minimum, the possibilities of air bubbles. The tube in question is simply that of Wright's with a small central bulbous swelling. I say small advisedly, because if made with a large bulb, much of its contents are lost on account of its adherence to the sides. To mix the blood cream serum and the emulsion they are passed and repassed through this bulb a dozen or more times, allowing the mixture to collect in the bulb in which it is incubated. It is important that the contents of the control tube and those in the others to be tested should each be passed through the bulb the same number of times.

PREPARING THE EMULSION.

At the Phipps Institute we prepare our emulsions in a manner similar to that adopted by Wright and others. The bacilli from flasks of broth culture filtered through filter paper or a Pasteur filter are washed in water and subsequently with salt solution of a strength of 1·5 per cent. and sterilized. A drop or two of this same strength salt solution is placed in a mortar and a very small mass of bacilli added. The mixture is rubbed up now for ten to fifteen minutes when a drop or two more of the solution is added and the grinding process continued for a few minutes, and so on, until the total amount of emulsion equals about 1 c.c.. This is transferred to a test tube, centrifugalized a few minutes and the supernatant fluid, of a milky opacity free from clumps of the organism, is drawn off and is ready for use. Nevertheless, it is always advisable to make a test of the emulsion before proceeding to employ it for investigations Failure to do this, as I have learned from bitter experience, often means the useless sacrifice of time and labor, to say nothing of the vexation to which one is apt to give vent, in a way that is more. forcible than elegant. Too thick an emulsion renders counting of the bacilli impossible, or at least difficult and uncertain, while, if too sparse the index is materially affected. Kinghorn, Twitchel, Carter and others, in a series of experiments have shown that the phagocytic index is in proportion to the dilution. An emulsion which gives from one to four bacilli to a cell is suitable. It is our custom to prepare it in quantities, a good deal of work being saved thereby. With proper precaution against contamination it can be kept for several days. At Saranac Lake Sanatorium emulsification is brought about by means of a porcelain ball mill. Von Ruch, however, putting the mill to the test says that he found it wanting, and not one whit better than the more primitive mortar and pestle, to which he has reverted.

STAINING THE SMEAR.

It is unnecessary to fix the smear as is the custom with some, by means of alcohol or other fixative, as the heat to which the slide is exposed during the process of the preliminary staining by carbol fuchsin is sufficient for the purpose. Our method is as follows:

Carbol fuchsin with heat, 2 minutes.
Wash with water.
Decolorize with 25 per cent. sulphuric acid.
Counterstain with borated methyleneblue 30 seconds.

The advantage of this latter counterstain over the much used and popular Loeffler's preparation is that the protoplasm of the cells is stained, which is not the case with either Loeffler's or Gabbet's—the latter a mixture which is both a decolorizer and stain. With the protoplasmic limits undefined one can readily comprehend how errors in computation could be made as it would be impossible, and is impossible, to definitely locate an organism in many instances, in other words to say whether it is within the cell or just without.

Dr. Hitchens has explained to you what constitutes a bacterial vaccine, and how they bring about curative results. In tuberculosis we make use of a vaccine, if one may so term it, called tuberculin, and inasmuch as you may at some time or another be required to know of this remedy I will briefly refer to it. There are several kinds of tuberculin on the market to-day, but when we refer to tuberculin we usually mean one of the three kinds, either the so-called old tuberculin, that known as "TR," or the Bacillen emulsion. All of these were originally the product of Koch's laboratory, but now many laboratories manufacture these for their own use after the Koch formula. The difference between them is that the former is merely a filtered bouillon culture of the bacillus concentrated by heat to one-tenth of its volume while the two latter contain the actual bacterial substance. At the present time these three kinds are being very extensively used.

THE VALUE OF ESTIMATING THE OPSONIC INDEX.

The earlier observations of Wright and Douglas were made with organisms other than the *B. tuberculosis*, and they showed, as you have already heard, that normal serum contained a bacteriotropic substance which they termed opsonin, and which was specific for the respective organisms. In 1905, before the Royal Society of London, Wright announced how, by means of his technique, it was possible to clear up a questionable diagnosis of tuberculosis, whether as a localized affection or general. His statement was based on much painstaking experiment in which he had for a co-worker Surgeon Reid. Not only did he show how this was possible by examination of the blood of the suspected individual, but also by other body fluids such as pus from a joint or the effusion from the chest or abdominal cavity. That by studying the opsonic power of the blood at least—because seemingly aside from the pioneers in this work little has been done with the other body fluids—a fairly good inference can usually be drawn as to the existence or non-existence of tuberculosis, I think is pretty well agreed on by most workers. A persistently low and uniform reading is usually found in cases of localized tuberculosis such as gland, joint and skin infections. To the contrary, uniformity of curve is rarely observed in conditions marked with constitutional disturbances. At one time it is high, perhaps twice as high as normal, and a little later abnormally low. Wright explains and with reason the difference in the condition of the blood in these two contracted categories in this wise: To quote him, " The condition of low opsonic power which is associated with strictly localized tuberculosis is almost certainly a condition which has preceded and has furnished the opportunity for infection. The fact that the opsonic index continues persistently low after infection has supervened, while it can invariably be raised by appropriate inoculations, indicates that the machinery of immunization with which the organism is furnished, is not, under the condition which obtains in strictly localized tuberculous infections, spontaneously called into play." The fluctuations in cases of active pulmonary tuberculosis he lays to the " periodic conveyance of tuberculous elements into the blood"—an auto-immunization. Here, then, with these facts borne out one can perceive what a valuable asset we have in Wright's discovery. Ross working with Wright pointed out what is considered a most trustworthy test for diagnostic purposes. His results are extremely interesting and seemingly very conclusive. In the course of his investigations he found that normal serum when heated to 60° C. for ten minutes, no longer had the power of activating the leucocytes. From a tuberculous person, however, in spite of the heating process the appetite of the cells for the bacilli was not at all disturbed.

Again, a probable diagnosis of tuberculosis can be made in those persons who, on receiving even a minute inoculation of tuberculin, respond with a very low opsonic reading. While a negative phase does occur in an individual, who is not tuberculous, it is only after a comparatively large dose, and this negative phase is ephemeral only. What most appeals to one in point of interest and ingenuity, however, is perhaps the method of diagnosis by comparing the serum of the patient with some other of his body fluids. Wright has shown that if the opsonic power of, say, some of the effusion from a patient's chest is much lower than his blood, the effusion is unquestionably tuberculous in character. I shall here take the liberty to intrude upon your valuable time to cite a case illustrating this, and do so, because it is really unique. A man, aged 30 years, showing grave constitutional symptoms baffled his physicians as to his malady. The latter suspected tuberculosis and, accordingly, some of his blood together with some fluid, obtained from his abdomen by tapping was sent to the laboratory. The report from the laboratory was "non-tuberculous," and on the grounds that while the index of the blood was 1·05, the fluid was ·99 or practically the same. The man's condition became worse. The clinicians refuted or at least doubted the diagnosis of those clever laboratory men. The condition was tuberculous unquestionably, they said, and once more blood and fluid were sent for confirmation. But again the laboratory diagnosis came back "non-tuberculous." This time the serum and fluid both revealed an index of 1. The man shortly afterward died, and on post mortem, what to the naked eye appeared as unquestionably tuberculous deposits were found on the peritoneum and the pleurae, much to the chagrin of the laboratory men, and to the delight of the physicians. However, microscopical examination of some of these apparent tubercles showed the typical picture of miliary carcinoma or cancer. Could there possibly have been a more gratifying vindication for these keen laboratory workers. In a recent number of the London *Lancet* we can read further evidences of the prolific work, which is being done in the Department of Therapeutic Immunization of St. Mary's hospital, by Wright and his assistants, and a large number of graphic charts are shown illustrating the various phases in Therapeutic Immunization.

The tables demonstrating the diagnostic and therapeutic problems are intensely interesting. Withal, the determination of the opsonic power of the blood in the hands of Wright, Douglas, and others in England has yielded results as remarkable as they are consistent. Over on this side of the Atlantic, however, such uniform success has not been the rule and consequently the opsonic theory has come in for a good deal of adverse criticism. Personally, while I have frequently obtained classic curves, I must confess, that many of my results have been provokingly disappointing, but that is neither the fault of Dr. Wright, nor his theory. I believe, when men here shall have worked as systematically, as doggedly, and as long as have our English cousins; when they cease to attempt to modify the technique as laid down by Wright, they will undoubtedly be able to produce results as consistent and valuable, and not before. Until we have done this, it is unfair for us to pass judgment. That the dosage of tuberculin can be controlled by opsonic determinations in localized tuberculosis can be shown, but for reasons pointed out in the earlier part of this paper it must be plain to you, why this is out of the question in persons, the victims of active and marked pulmonary lesions. Indeed in my modest opinion, tuberculin, unless given in very small doses is fraught with some danger in this latter type of cases. At the Phipps Institute, the concensus of opinion seems to be in favor of small, very small doses in all cases so treated, and opsonic determinations seem to substantiate this. With such doses, as has been in the past the custom to administer, the patient is continually kept in the negative phase, and not until the dose has been materially diminished do we find an augmentation of the opsonic power. Of course, in the administration of the remedy, the idiosyncrasy of the patient and the questionable strength of the remedy—because, of course, the very nature of it precludes standardization—must not be lost sight of. Aside from purposes of diagnosis, we may eventually find it unnecessary to resort to opsonic indices and as a guide to inoculations it may be relegated to the background. But one thing is certain, and that is that vaccine therapy is here to stay, and sera and vaccines will supplant in many cases pills and potions, which are, alas, too often as useless as they are unpalatable.

PROGRESS IN PHARMACY.

A QUARTERLY REVIEW OF THE MORE IMPORTANT ADVANCES IN PHARMACY AND MATERIA MEDICA.

By M. I. Wilbert,
Apothecary at the German Hospital, Philadelphia.

To one who is at all interested in the progress of the professional side of pharmacy, a retrospect of the meetings of medical and pharmaceutical organizations, during the past year, must indeed be an inspiration and provocative of a justifiable sense of satisfaction.

The proceedings at the annual meeting of the American Medical Association, the American Pharmaceutical Association and of other organizations have been reported at some length in this Journal and are well worth reviewing.

The annual meeting of the National Wholesale Druggists Association held in Denver, Col., the week following October 1st, appears to have been dominated by a careful consideration of legislative matters and the evident need for co-ordinating the several State food and drug laws with the provisions of the National Law.

Considerable attention was also devoted to the consideration of various methods that have been proposed for curtailing and regulating the sale of habit forming drugs and preparations containing them.

The National Association of Retail Druggists, at the annual meeting held in the city of Chicago the week following September 15th, decided to enter upon an active propaganda to popularize U.S.P. and N.F. preparations.

A special meeting of the Association was devoted to the discussion of the problems involved. At this and at the subsequent regular meetings of the Association, much enthusiasm was manifested and the resolutions directing that this work be undertaken were adopted without opposition of any kind.

From an educational, or a professional point of view this proposed propaganda is by far the most important, and the most far reaching, of any line of work undertaken by the National Association.

If carried to a successful issue it will bring with it a very material advance in the ideals and practices of present-day pharmacy, and it will certainly bring about an early realization of that better, if not completely satisfactory, understanding of the mutual duties and limitations of pharmacists and physicians as outlined by Dr. J. N. McCormack, in his address before the American Pharmaceutical Association, in New York, last September.

This address on the relations of pharmacists and physicians, appears to have been misunderstood, or at least misinterpreted, by some persons who really should know better.

The portion of the address that has been more or less severely criticized is the introduction, consisting largely of a quotation from the report of the committee on organization of the American Association and published, in part at least, in the AMERICAN JOURNAL OF PHARMACY, 1907, page 331.

To any one who has followed the reports of legislative work, in connection with State food and drug legislation, and particularly the work done in connection with the so-called formula-on-the-bottle bills, and at the same time remembers that the physician and the retail druggist look upon the situation from a radically opposite point of view, the strictures made by Dr. McCormack will appeal as being moderate indeed.

Pharmacists, if they wish to pose as professional men, cannot longer avoid their responsibility in connection with the sale of so-called proprietary remedies. They should collectively, and if this is not practicable, they must individually inquire into the nature and composition of the remedies they dispense. If found to be harmful, or not as represented, they can no longer shirk responsibility by hiding under the time-worn excuse that the public demands them and the public demands must be supplied.

It is rather interesting to notice how widespread the present agitation against proprietary and fake remedies has become. The following is from an editorial note by Gnomon (*Phar. Jour.*, London, 1907, page 360.):

" Sooner or later—and sooner, I hope, rather than later—pharmacists and wholesale druggists will recognize that they are equally interested in the suppression of quackery and of attempts to monopolize the trade in medicines by more or less insidious methods.

" There should be a concerted movement in the direction of making it clear to medical practitioners and the public that there is no virtue in secrecy so far as drugs, chemicals and galenical preparations are concerned, and that all the effects obtained by esoteric combinations of well known medicaments can be equally well obtained by the use of those medicaments under their own proper designation."

An editorial, in the same journal, one week later (September 24th, page 375) says:

"The majority of quack medicines which are advertised as tonics, or by similar alluring names, derive their popularity from the effects of sedative drugs, by which sensations of immediate comfort are imparted to the consumer, and which frequently lay the foundations for a confirmed habit of morphin taking."

A correspondent in the same number says: "It is high time that we disassociate ourselves from trickery, treachery, humbug, fraud and lies." Another correspondent (September 28th, page 427) says: "There is no getting over the fact that, by the actual connivance of some of our members and the passive attitude of others, we are in a high degree aiders and abettors. By no logic can we claim that our hands are clean."

In Germany restrictions on the sale of secret remedies are increasing in number and severity. A recent law just being enforced makes it unlawful for apothecaries or druggists to sell, except the former on the original prescription of a medical man, any medicinal compound the composition of which is unknown by the seller. The law of 1903 compelled proprietors to state ingredients and quantities on each package, but the new law goes much further and forbids all written or printed praise of any proprietary preparation on the label or the literature accompanying the package.

A preliminary list of the prescribed preparations has been published in the pharmaceutical journals. It includes upwards of 150 specialties, some of them of American origin.

American Medical Association, Post-Graduate Course.—As an interesting possibility of what may be accomplished by legitimate organization work, it may be well to call attention to the rather comprehensive course of post-graduate study that has been outlined by the American Medical Association. (*Jour. A. M. A.*, September 21, 1907, page 1043.) So far as outlined the course includes a weekly programme for six months' work, particular attention being paid to treatment and the study of materia medica, pharmacology and therapeutics.

Active Campaign Against Proprietary Medicines.—The Kentucky State Medical Association has undertaken an active campaign against medical frauds and for legitimate pharmaceuticals, including an active U.S.P. and N.F. propaganda.

The work is being done through the county societies and it is evidently the intention to get every medical practitioner to promise to take an active part in the campaign by getting him to signify his willingness to adhere to official, or honestly exploited remedies and to eschew all remedies of a doubtful or objectionable character.

The House of Delegates of the Kentucky State Medical Association, during the recent meeting in Louisville, also adopted a resolution recommending that the State Legislature pass a bill requiring graduation from a recognized college of pharmacy with its accompanying degree, as a qualifying necessity for permission to enter examination before the State Board for license as registered pharmacist. (*Jour. A. M. A.*, October 26th, page 1466).

Pharmacopœia Helvetica, ed. IV, is the official title of the recently published Swiss pharmacopœia which has been in course of revision for several years. Despite the fact that the several changes that are embodied in the book have been publicly discussed, the completed book has attracted unusual interest in Europe, and particularly in Switzerland, where the pharmacists are justly proud of their achievement in the pharmacopœial line.

The expectation that pharmacy in Switzerland will enter upon a new era of development with the adoption of the new, fourth, edition, of the official pharmacopæia appears to be amply justified by the advances that are evidenced in the book itself.

The new pharmacopœia contains upwards of 200 pages more than the now official third edition. This increase is largely devoted to an elaboration of the descriptions and tests for identity and purity. Assay processes are numerous and the use of the compound microscope will, in future, be obligatory.

The provisions of the International Conference for the Unification of Potent Medicaments have been closely followed; all of the remedies enumerated in the protocol being designated by the addition of the letters (P. I.).

The new pharmacopœia becomes official on March 1, 1908, and will require considerable change in the laboratory facilities of the average pharmacist. To assist Swiss pharmacists to adapt themselves to the requirements of the new pharmacopœia, and to perfect themselves in the necessary technique, in chemistry and microscopy, Professors Tschirch and Oesterle announce that they will conduct a post-graduate course of instruction, covering about ten days, open to all Swiss pharmacists.

Japanese Pharmacopœia—The English translation of the Japanese pharmacopœia has been published and was reviewed at some length in a recent number of the *Chemist and Druggist.*

A German translation of the new Japanese pharmacopœia has been published in Osaka. This latter translation was made by the Director of the Hygienic Laboratory, at Osaka, Mr. M. Hirayama. (*Phar. Post*, 1907, page 749.)

Pharmaceutical Education in Great Britain.—In an address at the opening of the sixty-sixth session of the School of Pharmacy of the Pharmaceutical Society of Great Britain, Prof. Raphael Mendola, of the Finsbury Technical College, and an honorary member of the Pharmaceutical Society, discoursed on the shortcomings of the scientific education of pharmacists in Great Britain. Comparing the training given British pharmacists with that given on the Continent of Europe, he finds that the former is far behind that of any other country in Europe, with the possible exception of Italy and Portugal.

Professor Mendola believes that the introduction of a course and degree in pharmacy by the Universities of Manchester, Glasgow and Edinburgh, will serve as a leavening influence to bring about the necessary demand for higher qualifications in the practice of pharmacy.

The address has been published in full in the several British Pharmaceutical journals. It is well worth a careful perusal by all American pharmacists and it should certainly be read and reread by all opponents of higher educational requirements.

The Flückiger Gold Medal has been awarded to Prof. Eduard Heckel, the Director of the Colonial Institute at Marseilles. The medal was founded by Dr. F. A. Flückiger, of Strasburg, in 1893, and is awarded every five years, in recognition of steps taken to promote the advancement of scientific pharmacy, irrespective of nationality. Mr. E. M. Holmes, the Curator of the Museums of the Pharmaceutical Society of Great Britain, received the first medal, and the second was presented to Dr. C. Schmidt, of the University of Marburg. (*Phar. Jour.*, September 14, 1907, page 335.)

Cactin and Cactina.—Dr. R. A. Hatcher (*Jour. A. M. A.*, page

1021) reviews the available literature of *Cactus grandiflorus* and records a number of control experiments made with the supposed active principle of the drug.

Hatcher concludes that cactina, as marketed at the present time by the Sultan Drug Company, and cactin, as sold by the Abbott Alkaloidal Company, are absolutely devoid of any action resembling that of digitalis or strychnine, and that they are evidently inert when used on animals in doses that are hundreds, and even thousands, of times as large as those recommended by their exploiters.

Calcidin (*Abbott*).—According to an analysis made in the chemical laboratory of the American Medical Association, this preparation is essentially a mixture of iodin, calcium iodid, lime and cornstarch made by mixing iodin, lime and cornstarch.

According to the makers, "calcidin (Abbott) is an entirely unique substance, being neither a true chemical compound nor a simple mixture of its ingredients. Briefly, it is calcium carrying an excess of freely available iodin." (*Jour. A. M. A.*, September 7, 1907, page 865.)

Calcidin Tablets do not have the same composition as calcidin itself. While 1 grain of the latter was found to contain approximately $\frac{1}{10}$ grain of iodin, three calcidin tablets, which are said to represent 1 grain of calcidin, were found to contain the equivalent of but $\frac{1}{83}$ grain of iodin.

Iodide of Lime (*Nichols*).—An analysis of this substance shows that it is essentially a mixture of lime and iodin, containing about 10 per cent. of the latter.

Iodid of Lime Tablets (*Nicholls*) were found to differ in composition from the original substance, each $\frac{1}{3}$-grain tablet containing the equivalent of $\frac{1}{128}$ grain of free iodin and colored brown by iron oxide. (*Jour. A. M. A.*, November 2, 1907, page 1540.)

Probilin Pills.—From a chemical examination of probilin pills, made for the Council on Pharmacy and Chemistry of the American Medical Association (*Jour. A. M. A.*, August 24, 1907, page 702), it appears that the true composition of this preparation differs materially from the formula, as published at that time, and is about as follows:

Phenolphthalein, 0·008; sodium salicylate, 0·01; sodium oleate and free oleic acid, 0·10; menthol, 0·01; moisture, 0 006; dusting powder, 0·065.

The dusting powder appears to be made up of lycopodium, licorice and charcoal.

Under date of October 5, Messrs. Schering and Glatz publish a revised formula for probilin which practically agrees with the analysis as given above.

Heroin and the Heroin Habit.—It has been claimed for heroin, the diacetylester of morphine, that it is less poisonous than morphine and also that it is generally more efficient and more reliable. According to M. P. Duhem, heroin does not possess any of these advantages. He found it to be fifteen times more poisonous than morphine for rabbits, and believes it to be equally poisonous for man.

He also states that heroin induces to a habit that is even more dangerous and more difficult of treatment than the morphine habit. (*Apotheker Zeitg.*, 1907, page 920, from "Progrès Médica.")

Maretin Poisoning.—The continued use of maretin, an antipyretic formerly exploited by the Farbenfabriken of Elberfeld, even in small doses, has been found to produce a high-grade anaemia accompanied by marked morphologic changes in the blood corpuscles. The danger from this drug is said to lie in its cumulative properties. (*Apotheker Zeitg.*, 1907, page 753.)

Copaiba.—E. J. Parry (*Chem. and Drug.*, September 28, 1907, page 518) asserts that an enormous amount of adulteration of copaiba is being practiced at the present time. The United States have recently rejected a number of parcels of copaiba which had until recently proved good enough for their market as well as the British.

Parry enumerates as a possible adulterant, hardwickia balsam, which has been said to be a commercial article on a large scale. This substance was described in a recent number (April, 1907) of Schimmel's Report, in which it is asserted to be obtained from *Hardwickia Pinata*, a stately tree closely allied to the *Copaifera* species, that is found in British India. Weigel and Hooper have examined the balsam which is said to vary somewhat in physical properties. Schimmel & Co. give the following figures: Specific gravity, 1·0021; acid number, 96·2; ester number, 12·3; content of volatile oil, 44 per cent.

Emulsient is a word that has been suggested as a substitute for the roundabout expression "emulsifying agent" or for the uncouth "emulsifier." (*Chem. and Drug.*, October 12, 1907, page 577.)

Xrayser, in commenting further, says: "It is a term that deserves to survive. It follows precedents, is unambiguous and only competes with admittedly unsatisfactory rivals."

Mistletoe, Viscum Album, formerly had a reputation as a remedy in the treatment of post partem hemorrhage, and the berries are also said to have purgative and emetic properties. It is being reinvestigated in France and is said to have been shown to diminish arterial pressure.

Several pharmaceutical preparations have been prepared from mistletoe growing on poplar and plum trees. These have been brought to the attention of the French Society of Therapeutics by M. Gaultier. (*Chem. and Drug.*, August 31, 1907, page 377.)

Sarsaparilla.—In a recent number of the *Berichte der Deutschen Pharmaceutischen Gesellschaft* (1907, No. 6), C. Hartwich discusses the great uncertainty of our knowledge of sarsaparilla and points out that a number of distinctions formerly given much weight, have been altered materially in the course of time.

Hartwich points out that the structural characteristics of sarsaparilla, rather than the form of packing and the supposed origin, are to be depended on to distinguish the several varieties of the drug.

He also shows that the varieties of sarsaparilla are more numerous than is generally supposed.

Regeneration of Formaldehyde.—Huber and Bickel (*Munch. Med. Woch. schr.*, 1907, page 1800) recommend freshly calcined lime, formaldehyde solution and boiling water for disinfection.

Three liters of the solution of formaldehyde, 3 kilo. of freshly calcined lime and 9 liters of boiling water are mixed in a suitable tub or iron vessel.

The authors claim that but a small fraction of the formaldehyde is lost by combining with the lime, and that the technique affords a simple, cheap and harmless substitute for the more efficient spray technique when the latter is not available or is otherwise objectionable.

Autan.—This is a mixture, in powder form, of a metallic peroxid and paraform. When mixed with a given quantity of hot water a rather violent reaction takes place, liberating formaldehyde and water vapor. (*Chem. Zeitg. Rept.*, 1907, page 376.)

Acetylenetetrachlorid.—This is an aromatic oily substance having a boiling point of 145° C. On account of its high boiling-point it is being widely used as a solvent in chemical and technical industries, being particularly well adapted for the recrystallization of the chemicals soluble in it. It is also used in rubber industries as a solvent for resinous substances, and has latterly been recommended as an insecticide, being less poisonous and less volatile than other chlorin preparations. (*Phar. Zeitg.*, 1907, page 704.)

Aesco chinin is said to be a combination of the active principles of the horse-chestnut with quinine. The preparation occurs as a yellowish amorphous powder, insoluble in water and ether but readily soluble in alcohol. It is said to be useful in neuralgia, migraine and rheumatism and is given in doses of 0·10 to 0·20.

Escalin Pastilles.—According to F. Zernik (*Apothek. Zeitg*, 1907, page 918), each pastille contains approximately 2·5 grammes of finely powdered metallic aluminum, 1·5 grammes of glycerin, and 1·0 of distilled water. They are recommended by the makers as being useful in cases of hemorrhage from the stomach or intestine. They are supposed to act purely mechanically by causing a thin coating of the metallic powder to be distributed over the mucous lining of the internal organs.

Formobor.—This is the name given to an aqueous solution containing 4 per cent. of formaldehyde and 1·5 per cent. of borax. The mixture is being recommended as a disinfectant and for sterilizing instruments. (*Phar. Zent. H.*, 1907, page 742.)

Hydrocaffeine is a derivative of caffeine identical with tri-methyl uric acid, in combination with sodium benzoate. It occurs in needle-shaped crystals which sublime at 345° C. The substance is readily soluble in water but is only slightly soluble in alcohol, ether and chloroform. It is recommended as a diuretic in doses of 0·5 gramme. (*Chem. and Drug.*, 1907, page 576.)

Jatrevine is a condensation product of menthol and isobutyl phenol. It is recommended to be used in cases of pulmonary tuberculosis. (*Chem. and Drug.*, 1907, page 576.)

Kolatin is a crystalline substance that has been isolated from kola nuts by Goris. Kolatin is a phenol combination having the formula $C_8H_{10}O_4$. It has tannin-like properties and crystallizes in prismatic needles. (*Phar. Zent. H.*, 1907, page 707.)

Sodium Anilarsenate has been recommended by Hallopeau for hypodermic injections in syphilis. It is said to be more efficient, in many cases, than mercury or iodine. Sodium anilarsenate is not to be confounded with atoxyl. (*Phar. Zent. H.*, 1907, page 766.)

Sulphoid is a trade name for a colloidal form of sulphur prepared according to a patented process in which precipitated sulphur is made in the presence of a colloidal body such as albumen, the mixture being constantly agitated during precipitation.

Sulphoid is a grayish white powder containing 80 per cent. of sulphur and 20 per cent. of albumen. It is said to be insoluble in alcohol, ether, acetone and similar solvents, but is said to be soluble in normal saline solution, the solution being precipitated by acids. The substance is being marketed in the form of soap, head pomade and ointment, each containing 10 per cent. of sulphoid. (*Chem. and Drug.*, 1907, page 576.)

Tannothymal is a combination of tannin-thymol-methan, that is being recommended as an antidiarrhœic. It occurs as a whitish gray to reddish gray, odorless and nearly tasteless powder. It is somewhat astringent and is decomposed at higher temperatures. Tannothymal is nearly insoluble in water and is only slightly soluble in ether or chloroform. (*Phar. Zeitg.*, 1907, page 690.)

Thiodine is the trade name for thiosinamine ethyl iodide. It occurs as white crystals having a melting point of 68° C. It is readily soluble in water but only slightly soluble in alcohol. Thiodine has been recommended as being useful in syphilitic affections and in tabes and may be given in doses of 0·10 twice a day, preferably in pill form. (*Phar. Zeitg.*, 1907, page 429.)

Urogosan is said to be a combination of formalin with gonosan that has been found useful in the treatment of septic conditions of the bladder, especially those arising from gonorrheal infection. (*Phar. Jour.*, September 14, 1907, page 359.)

CORRESPONDENCE.

SYNTHETIC CAMPHOR, REPLY TO CRITICISMS.

Professor Henry Kraemer,

DEAR SIR:—In reply to the criticisms made by Mr. Frank Tutin relative to structural formulas contained in my paper on "Synthetic Camphor," I wish to state that these formulas were employed with some misgivings, because of the large number that had been suggested or advocated during recent years, and concerning which there is at present little unanimity among chemists, excepting camphor. It was deemed advisable, however, to indicate the chief steps involved by using some formulas. Criticisms were expected. Bredt's formula for camphor and pinene were intended to be used. The formula for camphor as it appears in the article is incorrect. The error was noticed in the proof and corrected, but, for some reason, the printer did not make the necessary change. The adjacent CO and CH_2 groups are interchanged and should be transposed.

It is true that a number of investigations have been made since Bredt suggested his structural formula for pinene, but the best that can be said for same is that the formula suggested by Wagner (the one claimed by Mr. Tutin, "now generally accepted") is indicated. Concerning this formula, F. Heusler, in his book translated by F. J. Pond, entitled "Chemistry of the Terpenes," page 47, makes the following statement:

"In the critical consideration of the constitutional formulas of pinene, and other members of the terpene series, which have been advanced by G. Wagner during the course of his investigations above referred to, the incompleteness of the experimental foundations for these formulas, as is sufficiently observed from what has been mentioned, must not be neglected."

Relative to the criticism of structural formulas for camphor and pinene, appearing upon page 353, it is only necessary to state that they are the ones used in the patent, and represent the ideas of one investigator.

Very few chemists have ventured to suggest structural formulas for either borneol or isoborneol. Those used in my communication will be found in an article published by Dr. W. Gössling in the *Pharmazeutische Post*, Volume 38, page 599. So far as I know no criticism has appeared in subsequent numbers of the *Pharmazeutische Post* or other literature relative to these formulas. The criticisms of Mr. Tutin, excepting the correction in the camphor formula are, in my opinion, not well founded.

Respectfully,

L. F. KEBLER.

WASHINGTON, D. C., December 2, 1907.

NOVEMBER PHARMACEUTICAL MEETING.

The regular pharmaceutical meeting of the Philadelphia College of Pharmacy was held Tuesday afternoon, November 19th, with President Howard B. French in the chair, who said in part in introducing the speakers:

" The addresses to-day deal with theories which are comparatively new, but which are exceedingly interesting from the point of view of the research worker."

The meeting was well attended, and was devoted principally to a symposium on the "Opsonic Theory" and its application in the treatment of infections.

Dr. A. Parker Hitchens, of Glenolden, Pa., who spent the past summer working in the laboratory of Sir A. E. Wright, of England, the author of the Opsonic Theory, read an interesting paper entitled "The Opsonic Theory and Bacterial Vaccines." (See page 556.)

Dr. E. Burvill-Holmes, bacteriologist of the Phipps Institute, Philadelphia, an institution designed for the study and treatment of tuberculosis, read a somewhat technical, but instructive paper on "The Opsonic Theory and its Relation to Tuberculosis," which is published in this number of this JOURNAL (p. 563). Two points emphasized by Dr. Burvill-Holmes were smallness of dose of the bacterial vaccines and a strict adherence to the technique worked out by Wright and some other investigators.

It was brought out in the general discussion that while the field of the so-called vaccine therapy is a promising one, and that while the vaccines have been shown to have a value in certain diseases, particularly those of a localized character, and in the hands of those who are able to carry out the technique involved in determining the opsonic index, there is need of conservatism in their application.

Dr. Burvill-Holmes when asked as to the results of the treatment at Phipps Institute, said that he preferred to occupy a conservative position. He said that the patients in the hospital at Phipps Institute had tuberculosis in a more or less advanced stage, as only those known to have the disease were admitted, and that some of them were benefited and others not. In the dispensary of the Institute, on the other hand, Dr. Burvill-Holmes said that a fair measure of success had been attained.

Dr. John M. Swan, of the Polyclinic Hospital, Philadelphia, said that he had visited Wright's Laboratory and his clinics at St. Mary's

Hospital, London, and that he had spent about eight hours there. He said that he would not undertake to discuss the value of the opsonic theory, but would only give the impressions received when he visited Dr. Wright. A large number of patients attend the clinics at St. Mary's Hospital, the majority of whom are suffering from tuberculosis of the bones, joints and lymphnodes.

To these one injection of tuberculin is administered about every ten days. He said that the spectacle was truly impressive, and that the results in the hands of those who are devoting themselves to this special work are really remarkable. Dr. Swan said, however, that he did not witness an instance in which a patient with pulmonary tuberculosis was treated, but that some patients with pulmonary tuberculosis had been treated in the wards of the hospital.

M. I. Wilbert, Ph. M., said that in a letter recently published in the *Journal of the American Medical Association* (November 16, 1907, p. 1690), Dr. Reid Hunt reports that in Ehrlich's laboratory special attention is now being given to the study of "new drugs of definite chemical composition."

Others taking part in the discussion were Professors Remington and Lowe, and Messrs. W. A. Pearson and E. M. Boring.

The programme concluded with a resumé of recent advances in pharmacy by Mr. Wilbert. (See page 570.)

Florence Yaple,
Secretary pro tem.

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